Government of the People's Republic of Bangladesh
Ministry of Health and Family Welfare

HEALTH BULLETIN 2014

Management Information System
Directorate General of Health Services
Mohakhali, Dhaka 1212
www.dghs.gov.bd

Government of the People's Republic of Bangladesh
Ministry of Health and Family Welfare

HEALTH BULLETIN 2014

2nd Edition
December 2014

Management Information System
Directorate General of Health Services
Mohakhali, Dhaka 1212
Tel: 02-8816412, 8816459; Fax: 02-8813875
email: info@dghs.gov.bd
www.dghs.gov.bd

EDITORIAL BOARD

We acknowledge, with gratitude, the contributions of all other personnel working in the public and private health systems of Bangladesh, who were involved directly or indirectly in the production of this Health Bulletin by sending data or providing logistical support

Honorable Minister
Ministry of Health and Family Welfare
Government of the People's Republic of Bangladesh

MESSAGE

It is a great pleasure to know that Health Bulletin 2014 is going to be published on time. This is an important publication from MIS-Health of the Directorate General of Health Services (DGHS). Each year Health Bulletin reflects the health situation of the country. I am really glad to observe the progress and achievements of Bangladesh in the health sector over the past few years. Although we have limitation of resources, the experience and progress of Bangladesh in some of the health-related issues are already being considered globally as examples of success in resource-poor settings.

Achievements in the health sector are the results of initiatives taken by the Government since 2009. The Government started its journey towards progress, with a slogan of 'Digital Bangladesh'. With the leadership of honorable Prime Minister Sheikh Hasina, the Government has been continuing to prioritize the health sector till date. The Ministry of Health and Family Welfare is one of the leading entities that embraced the campaign of establishing Digital Bangladesh. As a consequence, we see today the adoption of information and communication technologies in this ministry both for providing health services and disseminating health information.

I hope that this bulletin will serve as a useful tool for evaluation of our work and will indicate the areas for improvement.

I am thankful to the officials of MIS-Health for their hard work in the production of this valuable document.

Joy Bangla, Joy Bangabandhu.
Long Live Bangladesh.

Mohammed Nasim, MP

Zahid Maleque, MP
Honorable State Minister
Ministry of Health and Family Welfare
Government of the People's Republic of Bangladesh

MESSAGE

It is really a matter of proud for me to see the achievements of Bangladesh in the health sector. The programs and projects undertaken by the present Government under the able leadership of Honorable Prime Minister Sheikh Hasina are now yielding positive results in the health sector. Besides serving millions of people of Bangladesh, these initiatives are drawing global attention. As recognition, the Bangladesh Government earlier obtained the UN South-South Award for 'Digital Health for Digital Development'.

I congratulate the officials of the Ministry of Health and Family Welfare for these achievements. The hard-working persons of MIS-Health deserve special mention for successfully leading the process of digitalization in health services and improving the health information systems in Bangladesh. The quality and coverage of this bulletin is a reflection of their sincere efforts.

I hope all concerned personnel, ranging from local health managers to the policy-makers as well as the researchers in various health-related fields, will be benefited from this informative publication.

Joy Bangla, Joy Bangabandhu.

Long Live Bangladesh.

Zahid Maleque, MP

Syed Monjurul Islam
Secretary
Ministry of Health and Family Welfare
Government of the People's Republic of Bangladesh

MESSAGE

I am glad to know that the 2nd edition of Health Bulletin 2014 is being published by Management Information System of the Directorate General of Health Services. Publishing a second edition of a bulletin like this reflects our aptitude of keeping regular updates of necessary information relating to health services. I sincerely hope all stakeholders, including the top-level policy-makers, will consult this bulletin to utilize its documented facts and findings relating to health programs with a view to using our limited resource wisely and optimally.

I congratulate everyone involved in the production of this flagship publication on behalf of the Ministry of Health and Family Welfare. I want to give special thanks to the hard-working persons of MIS-Health and hope they will incorporate the suggestions from the readers of the Bulletin so that the quality of publication gets even better in the future.

Syed Monjurul Islam

Director General
Directorate General of Health Services
Mohakhali, Dhaka

MESSAGE

I am glad that Health Bulletin 2014 is coming out in due time. This is an important annual publication of DGHS that highlights the performance of all health-related services in Bangladesh. I hope the current bulletin will give us comprehensive and reliable information about different programs and projects.

Accurate field-level data are essential for correct decisions. In a country like ours, we should always try to make the best use of our limited resources by making decisions based on evidence and information. I, therefore, urge all concerned authorities and individuals to utilize the bulletin for planning and decision-making.

The quality of Health Bulletin is improving every year by efficient and innovative use of information technologies and persons with expertise in publication. The Management Information System under DGHS deserves special appreciation for this work. I thank Professor Dr. Abul Kalam Azad, Additional Director General (Planning & Development) and Director-MIS, and all officials of DGHS, who contributed to the production of this publication.

Professor Dr. Deen Mohd. Noorul Huq

From Chief Editor's Desk

Often I feel proud that I have been entrusted with the responsibilities of editing and publication of some important publications, including Health Bulletin, the annual flagship publication of the Directorate General of Health Services. Yet, at times, I am perplexed at the risks and inadvertent failure or the perceived and actual stress associated with editing and production of publications in general and of any like the Health Bulletin in particular, production of which is time-bound, with a fixed deadline.

This year, we fixed a deadline for publication of the Health Bulletin, keeping in mind the upcoming regional events: the 32nd Meeting of the Health Ministers of South-East Asia Region (SEAR) and the 67th Meeting of the Regional Committee of SEAR to be held in Dhaka, with an intention to handover the hard copies to the distinguished participants. When the actual work started, we never could forget this tight deadline and, fortunately (rather I should say miraculously), we have been able to bring out this publication on time.

The Bulletin highlights the activities and healthcare situation prevailing in the county during 2013-2014. We are thankful to those who sent their updated data to make this timely publication possible. It is noticeable and appreciable that a large number of private and NGO facilities are now sending their healthcare-related data to MIS-DGHS. Digitalization of the reporting system under the leadership of MIS-DGHS has added an extra enthusiasm among the healthcare managers to showcase their activities through Health Bulletin.

I express my sincere gratitude and thanks, for their cooperation and support, to Mr. Mohammed Nasim, MP, Hon'ble Minister for Health and Family Welfare; Mr. Zahid Maleque, MP, Hon'ble State Minister for Health and Family Welfare; Mr. M.M. Neazuddin, Secretary, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh; and to my Director General Professor Dr. Deen Mohd. Noorul Huq, for his active support and guidance for timely production of the Bulletin.

Every year, we pay our utmost attention to enriching the Bulletin with new information and attributing a good look to it. I have always been fortunate to have skilled colleagues in the MIS-DGHS, who collect and edit the data from national to the field-level health facilities, and collate these for inclusion in the Bulletin. I am thankful to members of the production team for this publication, especially those who work in the MIS to bring out this publication, with minimum outsourcing.

I invite positive criticisms from the readers, media personnel, and publication professionals so we can continuously improve the quality of production of this publication.

Professor Dr. Abul Kalam Azad
Additional Director General (Planning & Development)
and
Director, Management Information System
Directorate General of Health Services
Government of the People's Republic of Bangladesh

ACRONYMS

ADB	Asian Development Bank
ADP	Annual Development Program
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
AHI	Assistant Health Inspector
AIDS	Acquired Immunodeficiency Syndrome
ALS	Average Length of Stay
AMC	Alternative Medical Care
ANC	Antenatal Care
APIR	Annual Program Implementation Report
APR	Annual Program Review
ARC	American Red Crescent
ARI	Acute Respiratory Infection
BBS	Bangladesh Bureau of Statistics
BCC	Behavior Change Communication
BCG	Bacillus Calmette Guerin
BCS	Bangladesh Civil Service
BDHS	Bangladesh Demographic and Health Survey
BDT	Bangladeshi Taka
BEOC	Basic Emergency Obstetric Care
BGC	Bangladesh Geographic Survey
BHE	Bureau of Health Education
BIDS	Bangladesh Institute for Development Studies
BINP	Bangladesh Integrated Nutrition Project
BMA	Bangladesh Medical Association
BMI	Body Mass Index
BMMS	Bangladesh Maternal Mortality Survey
BMRC	Bangladesh Medical Research Council
BNHA	Bangladesh National Health Accounts
BRAC	Bangladesh Rural Advancement Committee
BSA	Bangladesh Society of Anesthesiologists
BSMMU	Bangabandhu Sheikh Mujib Medical University
CBHC	Community-based Healthcare
CABG	Coronary Artery Bypass Grafting
CBN	Cost of Basic Needs (method)
CC	Community Clinic
CDC	Communicable Disease Control
CDD	Control of Diarrheal Diseases
CFP	Conceptual Framework Paper
CGA	Comptroller General of Accounts
CHCP	Community Healthcare Provider
CIDA	Canadian International Development Agency
CIDD	Control of Iodine Deficiency Disorder
CMCH	Chittagong Medical College Hospital
CME	Centre for Medical Education
CMMU	Construction, Maintenance and Management Unit
CMNS	Child and Mother Nutrition Survey
CMSD	Central Medical Stores Depot
CNP	Community Nutrition Promoter
CNS	Child Nutrition Survey
COPD	Chronic Obstructive Pulmonary Disease
CPR	Contraceptive Prevalence Rate
CRF	Chronic Renal Failure
CS	Civil Surgeon
C-section	Cesarean Section
CSO	Community Support Organization
DAB	Diabetic Association of Bangladesh
DBRH	Demand-based Reproductive Health
DCA	Development Credit Agreement
DCM	Dilated Cardiomyopathy
DDA	Directorate of Drug Administration
DDC&H	Dhaka Dental College & Hospital
DF	Dengue Fever
DFID	Department for International Development
DG	Director General
DGFP	Directorate General of Family Planning
DGHS	Directorate General of Health Services
DH	District Hospital
DHF	Dengue Hemorrhagic Fever
DMC	Dhaka Medical College
DMCH	Dhaka Medical College Hospital
DNS	Directorate of Nursing Services
DOTS	Directly Observed Treatment-Short Course
DP	Development Partner
DPA	Direct Project Aid
DPHE	Department of Public Health Engineering
DSF	Demand-side Financing
ECNEC	Executive Committee of National Economic Council
EDPT	Early Diagnosis and Prompt Treatment
EmOC	Emergency Obstetric Care
EPI	Expanded Program on Immunization
EPR	Emergency Preparedness
ERD	Economic Relations Division
ESD	Essential Service Delivery
ESP	Essential Service Packages
ETT	Exercise Tolerance Test
EU	European Union

FEP	Filariasis Elimination Program
FMAU	Financial Management and Audit Unit
FMRP	Financial Management Reforms Project
FP	Family Planning
FSNSP	Food Security Nutritional Surveillance Project
FWA	Family Welfare Assistant
FY	Financial Year
GAVI	Global Alliance for Vaccine and Immunization
GDP	Gross Domestic Product
GFTAM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GHDCH	Government Homeopathic Degree College Hospital
GO	Government Organization
GOB	Government of Bangladesh
GTC	Government Tibbia College
GUADCH	Government Unani and Ayurvedic Degree College & Hospital
HA	Health Assistant
HDI	Human Development Index
HDS	Health and Demographic Survey
HEB	Health Education Bureau
HEU	Health Economics Unit
HFWC	Health and Family Welfare Center
HI	Health Inspector
HIES	Household Income and Expenditure Survey
HIU	Health Information Unit
HIV	Human Immunodeficiency Virus
HIV/AIDS	Human Immunodeficiency virus/ Acquired Immunodeficiency Syndrome
HKI	Helen Keller International
HLIC	High-level Inter-ministerial Committee
HSM	Hospital Services Management
HMPD	Health Manpower Development
HNP	Health, Nutrition and Population
HNPSP	Health, Nutrition and Population Sector Program
HPNSDP	Health, Population and Nutrition Sector Development Program
HR	Human Resource
IAPB	International Association for Prevention of Blindness
ICOVED	Integrated Control of Vector-borne Diseases
ICT	Information and Communication Technology
IDA	Iron-deficiency Anemia
IDD	Iodine-deficiency Disorder
IDH	Infectious Diseases Hospital
IEC	Information, Education and Communication
IEDCR	Institute of Epidemiology, Disease Control & Research
IHSM	Improved Hospital Services Management
IHT	Institute of Health Technology
IMCI	Integrated Management of Childhood Illness
IMED	Implementation, Monitoring and Evaluation Division
IMF	International Monetary Fund
IMHR	Institute of Mental Health and Research
IMR	Infant Mortality Rate
IOL	Intraocular Lens
IPGMR	Institute of Postgraduate Medicine and Research
IPH	Institute of Public Health
IPHN	Institute of Public Health Nutrition
IPM	Individual Performance Management
i-PRSP	Interim Poverty Reduction Strategy Paper
IRS	Indoor Residual Spraying
IST	In-service Training
IT	Information Technology
ITHC	Integrated Thana Health Complex
ITMN	Insecticide-treated Mosquito-net
IUD/IUCD	Intra-uterine (Contraceptive) Device
IVM	Integrated Vector Management
IYCF	Infant and Young Child Feeding
JICA	Japan International Cooperation Agency
KMCH	Khulna Medical College Hospital
LAN	Local Area Network
LBW	Low Birthweight
LD	Line Director
LLIN	Long-lasting Insecticidal Net
LLP	Local-level Planning
LTSO	Long-term Strategy Options
M&E	Monitoring & Evaluation
M/F	Male/Female Ratio
MATS	Medical Assistant Training School
MBDC	Mycobacterial Disease Control
MC	Medical College
MCH	Maternal and Child Health
MCH	Medical College Hospital
MCWC	Maternal and Child Welfare Center
MDA	Mass Drug Administration
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MIS	Management Information System
MMR	Maternal Mortality Ratio
MNCH	Maternal, Neonatal and Child Health
MNH	Maternal and Neonatal Health
MNHC	Maternal and Neonatal Healthcare
MO	Medical Officer

MoHFW	Ministry of Health and Family Welfare
MoLGRDC	Ministry of Local Government, Rural Development and Cooperatives
MoU	Memorandum of Understanding
MP	Member of Parliament
MSA	Management Support Agency
MSD	Medical Subdepot
MTR	Mid-term Review
MWM	Medical Waste Management
NCD	Non-communicable Diseases
NEMEW	National Equipment Maintenance and Engineering Workshop
NGO	Non-governmental Organization
NICRH	National Institute of Cancer Research and Hospital
NICVD	National Institute of Cardiovascular Diseases
NID	National Immunization Day
NIDCH	National Institute of Diseases of Chest and Hospital
NIKDU	National Institute of Kidney Diseases and Urology
NICRH	National Institute of Cancer Research & Hospital
NIMHR	National Institute of Mental Health and Research
NIO	National Institute of Ophthalmology
NIPORT	National Institute of Population Research and Training
NIPSOM	National Institute of Preventive and Social Medicine
NITOR	National Institute of Traumatology, Orthopedics and Rehabilitation
NASP	National AIDS and STD Program
NMSS	National Micronutrients Status Survey
NNS	National Nutrition Services
NNP	National Nutrition Program
NTP	National TB Program
OP	Operational Plan
OPD	Outpatient Department
ORS	Oral Rehydration Salt
ORT	Oral Rehydration Therapy
OT	Operation Theater
PH	Public Health
PKDL	Post Kala-azar Dermal Leishmaniasis
PMIS	Personnel Management Information System
PMMU	Program Management & Monitoring Unit
PRSP	Poverty Reduction Strategy Paper
PSM	Preventive and Social Medicine
RDU	Research and Development Unit
RADP	Revised Annual Development Program
RPA	Reimbursable Project Aid
RCHCIB	Revitalization of Community Healthcare Initiative in Bangladesh
RHC	Rural Health Center
SBTP	Safe Blood Transfusion Program
SEARO	South-East Asian Regional Office
SVRS	Sample Vital Registration System
TAST	Technical Assistance Support Team
TEMO	Transport & Equipment Maintenance Unit
TB	Tuberculosis
TT	Tetanus Toxoid
TTU	Technical Training Unit
UESDS	Utilization of Essential Service Delivery Survey
UHC	Upazila Health Complex
UHFPO	Upazila Health and Family Planning Officer
UHFWC	Union Health and Family Welfare Center
UNICEF	United Nations Children's Fund
UNGASS	United Nations General Assembly Special Session
USC	Union Subcenter
USI	Universal Salt Iodization
VAC	Vitamin A Capsule
VAD	Vitamin A Deficiency
WAZ	Weight-for-age z-score
WB	World Bank
WCBA	Women of Childbearing Age
WHO	World Health Organization

Contents

Joining ceremony on 7 August 2014 of more than 6,000 physicians to Bangladesh Health Service Cadre

CHAPTER 1

BANGLADESH AT A GLANCE

History

Bangladesh emerged as an independent nation in 1971 before which it was a province of Pakistan and was known as East Pakistan. After the fall of Nawab Sirajuddowla in the Battle of Plassey on 23 June 1757, this part of the Indian Subcontinent was ruled by the British from 1757 to 1947. In 1947, the British colonial rule ended, and the Indian Subcontinent was divided into two independent nations–India and Pakistan. Pakistan was divided into West Pakistan (now Pakistan) and East Pakistan (now Bangladesh). Profound disparities in governance between East and West Pakistan led to the craving for independence among the East Pakistanis since the Language Movement in 1952, followed by series of mass upsurge at various times during the 1960s and early 1970s and a 9-month Liberation War under the leadership of Bangabandhu Sheikh Mujibur Rahman, and Bangladesh emerged as a sovereign nation in 1971.

Figure 1.1. Map of Bangladesh

Geographical location

Bangladesh has a total land area of 147,570 square kilometers (56,977 square miles). It is a low-lying country, with latitude 24 degree north and longitude 90 degree east. The country borders India on three sides with the Indian states of West Bengal, Tripura, Assam, and Meghalaya. Only a small strip in the southeast shares a border with Myanmar. The Bay of Bengal lies to the south (Figure 1.1). Bangladesh comprises primarily floodplains, with scattered hills in the eastern and northern parts. Large rivers and an intricate web of canals and rivers form this Ganges Delta, the largest delta in the world.

Climate

Bangladesh is a tropical country with a hot and rainy summer (March to June), a warm and rainy monsoon (June to October), and a mild dry winter (October to March). January is the coldest month, with an average temperature of 26°C (78.8°F). April is the hottest month, with temperatures ranging from 33°C to 36°C (91.4°F to 96.8°F). Major part of Bangladesh receives more than 1,525 mm of rain a year, with areas near the hills receiving more than 5,000 mm, primarily during the monsoon (June-September). The humidity varies from 73% to 86% and is the highest during the monsoon and the lowest in the winter.

Religion and Culture

Majority (approx. 89%) of the population is Muslim. Hindus, Buddhists, and Christians comprise 9.6%, 0.6%, and 0.3% of the population respectively. Over 98% of the people speak Bangla. English is also widely spoken. Bangladesh's rich cultural traditions are displayed in archaeological sites, sculptures, terracotta, architecture, museums, archives, libraries, classical music, dance, paintings, dramas, folk arts, festivals, and ethnic cultural activities.

Population and Demography

Bangladesh Bureau of Statistics estimates population of Bangladesh as of 1 July 2011 to be 150.6 million. With annual population growth rate of 1.37% (BBS 2011), the estimated mid-year population of 2014 should be 156.06 million. Bangladesh is one of the most densely-populated countries in the world, with 1,203 people living per square km (in land area), and approximately 26% of the population lives in the urban area. The average household-size is 4.5, and life-expectancy at birth for both sexes is 70 years (WB 2012).

Governance

Bangladesh is divided into 7 administrative divisions. Each division is divided into several districts; each district is further subdivided into several upazilas; each upazila into several unions; and each union into nine wards (Figure 1.2). Wards are divided into several villages. However, ward is the lowest administrative unit of the local government, having at least one representative elected for 5 years by popular vote. The city corporations and municipalities are designated as urban areas, with 11 city corporations and 322 municipalities across the country. Bangladesh is a non-federal country governed by parliamentary democracy. The National Parliament is called Bangladesh Jatiya Sangsad. There are about 40 ministries. A ministry is headed a by a minister, with a secretary to head the bureaucrats. Some ministries are divided into functional divisions, with each division having a secretary to head the bureaucrats of the respective divisions. There are 21 such functional divisions. The Ministry of Health and Family Welfare is one of the largest ministries of the Government of Bangladesh.

Economy

Despite a declining trend, the agrarian sector dominates the country's economy, accounting for majority of the rural labor force. The principal industries of the country include readymade garments, textiles, chemical fertilizers, pharmaceuticals, tea-processing, sugar, and leather goods. The principal minerals include natural gas, coal, white clay, and glass-sand. Bangladesh has been utilizing a mixed system of public and private development, which operates on free-market principles. The GDP growth rate is 6% (World Bank 2013). The per-capita income is estimated for the fiscal year 2013-2014 at US$1,115 taking the fiscal 2005-2006 as the base year (BBS 2014).

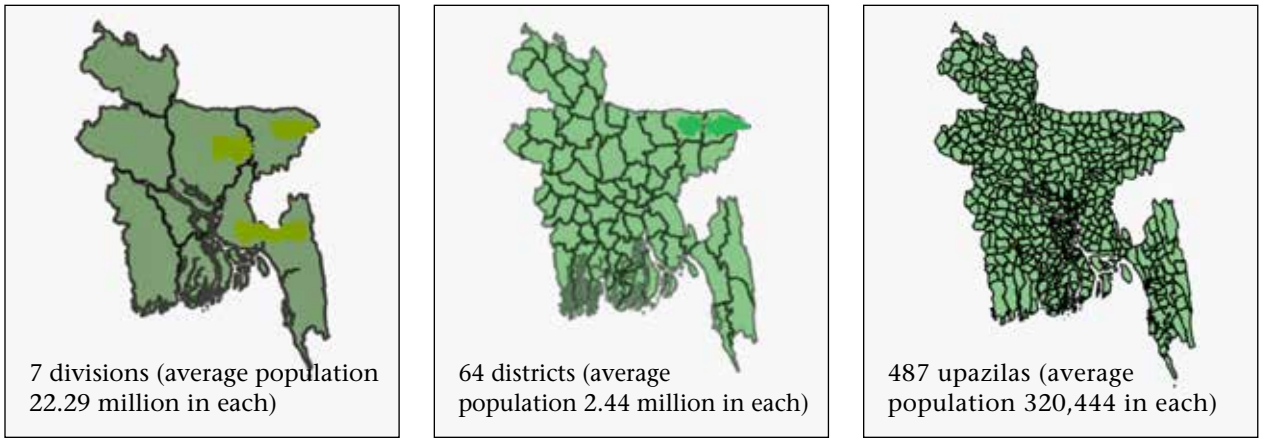


Figure 1.2. Administrative units of Bangladesh (number of divisions, districts, upazilas, unions, and wards in Bangladesh, with estimated average mid-year population of 2014 in each administrative unit)

Some basic information and data on Bangladesh

GEOGRAPHY

Location: Latitude 24° north and 90° east

Boundary: North and West: India; South: Bay of Bengal; East: India and Myanmar

Area (sq. km): 147,570 sq. km (56,977 sq. miles)

Territorial water: 12 Nautical miles

Standard time: GMT+ 6 hours

Rainfall: 203 mm/month

ADMINISTRATIVE UNITS (No.)

Division: 7

City corporation: 11

Metropolitan city: 4

Municipality: 322

District: 64

Upazila: 487

Union: 4,552

Ward: 40,968

Village (approx.): 87,310

DEMOGRAPHY

Population characteristics (SVRS 2011)

Population (in million): 156.06 (estimated mid-year population in 2014)

Population growth rate: 1.37% (BBS 2011)

Sex ratio (M/F): 104.9/100.0

Urban population: 26%

Religion: Muslim: 88.8%; Other religion: 11.2%

Population by age-group

Both sexes

0-14 year(s): 33.1%

15-49 years: 53.5%

50-59 years: 7.7%

60+ years: 6.9%

Male

0-14 year(s): 32.5%

15-49 years: 52.3%

50-59 years: 8.0

60+ years: 7.2%

Female

0-14 year(s): 31.2%

15-49 years: 54.7%

50-59 years: 7.4%

60+ years: 6.7%

No. of children per 1,000 women: National: 341; Rural: 364; Urban: 303

Other population characteristics

Population density per sq. km: 1,203 (in land)

Dependency ratio: National: 57%; Rural: 61%; urban: 51%

Household (approx. no.): 34.4 million

Average size of household (No. of members per household): 4.5

% of male-headed households: 86.7%

% of female-headed households: 13.3%

Crude birth rate: Per 1,000 population 19.2

Crude death rate: Per 1,000 population 5.5

Net reproduction rate (NRR) per woman (15-49 year): 1.03

Mean age at first marriage (in years): Male: 24.9; Female: 18.6

EDUCATION AND ECONOMY

Literacy rate (7+ years): Both sexes: 55.8%; Male: 58.4%; Female: 53.2% (SVRS 2011)

Adult literacy rate: (15+ years): Both sexes: 58.8; Male: 62.5%; Female: 55.1% (SVRS 2011)

Per-capita GDP (in US$) in FY 2013-2014: 1,115 (BBS 2014)

GDP growth rate (%): 6% (WB 2013), 6.12% (BBS 2014)

Poverty rate: National: 26.0% (WB 2013)

Main occupations: Agriculture, forestry, fisheries: 36.1%; Non-agriculture: 63.9% (BIHES 2010)

Average monthly household income (Tk): National: 11,479; Rural: 9,648; Urban: 16,475 (HIES 2010)

Average monthly household expenditure (Tk): National: 11,200; Rural: 9,612; Urban: 15,531 (HIES 2010)

Average monthly household consumption expenditure (Tk): National: 11,003; Rural: 9,436; Urban: 15,276 (HIES 2010)

Average monthly household food expenditure (Tk): 2,491; Rural: 2,122; Urban: 3,526 (HIES 2010)

Share of food expenditure on total household expenditure (Tk): 53.85%; Rural: 57.67%; Urban: 47.40% (HIES 2010)

Per-capita daily calorie intake (kcal): National: 2,318.3; Rural: 2,344.6; Urban: 2,244.5 (HIES 2010)

Households benefiting from social safety nets: National: 24.57%; Rural: 30.12%; Urban: 9.42% (HIES 2010)

Households with access to electricity: National: 63.6% (SVRS 2011)

Households with mobile phones: National: 63.7%; Rural: 56.7%; Urban: 82.7% (HIES 2010)

HEALTH STATUS

Under-5 mortality rate (per 1,000 livebirths): 53 (BDHS 2011); 60 (MICS 2012-2013); 41 (UN 2013)

Infant mortality rate (per 1,000 livebirths): 43 (BDHS 2011); 46 (MICS 2012-2013); 33 (UN 2013)

Neonatal mortality rate (per 1,000 livebirths): 32 (BDHS 2011); 24 (UN 2013)

Maternal mortality ratio (per 100,000 livebirths): 170 (UN 2013)

Life-expectancy at birth (year): Both sexes: 69.0; Male: 67.9; Female: 70.3 (SVRS 2011); Both sexes: 70 (WB 2012)

Total fertility rate (birth per women 15-49 years): 2.3 (BDHS 2011); 2.2 (UN 2012); 2.3 (MICS 2012-2013)

Contraceptive prevalence rate (%): 61.2 (BDHS 2011); 61.8 (MICS 2012-2013)

Unmet need for family planning (%): 13.5 (BDHS 2011); 13.9 (MICS 2012-2013)

Births attended by skilled health personnel (%): 26.5 (BMMS 2010); 31.7 (BDHS 2011); 43.5 (MICS 2012-2013)

Antenatal care coverage (at least one visit by skilled health professional) (%): 54.6 (BDHS 2011); 58.7 (MICS 2012-2013)

Antenatal care coverage (at least four visits) (%): 25.5 (BDHS 2011); 24.7 (MICS 2012-2013)

Postnatal care received by mothers from a trained care provider within 2 days after delivery: 27 (BDHS 2011); 41.2 (MICS 2012-2013)

Birth rate among adolescent mothers/1,000 women: 105.0 (BMMS 2010); 118.3 (BDHS 2011)

Institutional delivery rate (%): 28.8%
Public facility: 11.8%
Private facility: 15.1%
NGO facility: 1.9% (BDHS 2011)

Home delivery rate:
71.0% (BDHS 2011)

C-section rate: 17.1% (BDHS 2011); 11.7% (estimated by indirect methods; see Chapter 4)

Malaria prevalence/100,000 population (in endemic areas, in 2013): 20.3 (DGHS 2014) estimated based on reported malaria cases

Malarial death rate/100,000 population (in endemic areas, in 2013): 0.0001 (DGHS 2014) estimated based on reported malaria cases

Under-five children sleeping under insecticide-treated bednets in endemic areas (%): 94.4 (DGHS 2012)

Under-five children with fever treated with appropriate antimalarial drugs (%): 89.0 (DGHS 2011)

TB (all forms) prevalence rate/100,000 population:
434 (DGHS 2014)

TB death rate/100,000 population:
45 (DGHS 2011)

New smear+ve TB case notification rate under DOTS (%): 68 (NTP 2013)

TB cure rate (%) with DOTS:
92.0 (NTP 2012)

HIV prevalence among population aged 15-24 years (%): 0.7% (most-at-risk population group) (NASP 2011)

Population with advanced HIV infection with access to ARV drugs (%): 45.0 (UNGASS 2012)

Immunization (valid vaccination coverage) (EPI-CES 2013)

≤12 months old children: BCG 95%; OPV1 95%; OPV2 94%; OPV3 92%; Penta1 91%; Penta2 93%; Penta3 92%; Measles 86%; Full vaccination: 81%

≤23 months old children: BCG 95%; OPV1 95%; OPV2 94%; OPV3 92%; Penta1 91%; Penta2 93%; Penta3 92%; Measles 89%; Full vaccination: 84%

Tetanus toxoid coverage (%) among women of childbearing age:
TT1 92%; TT2 89%; TT3 74%; TT4 52%; TT5 32% (EPI-CES 2013)

Vitamin A coverage

Infant (6-11 months): 98% (NNS 2014); Children (12-59 months): 99% (NNS 2014); Postpartum women: 36% (EPI-CES 2013)

Iron deficiency-related information

Antihelminthes coverage:
24-59 months old children 90% (EPI-CES 2013)

Percentage of women taking iron-folate tablets during last pregnancy: 55% (FSNSP 2010)

Iodized salt coverage

Coverage of households with iodized salt: 80% (NMSS 2011-12)

WATER AND SANITATION

Households with access to tap and tubewell water for drinking:
98.2% (SVRS 2011); 97.9% (MICS 2012-2013)

Households with access to sanitary toilet facility: 63.6% (SVRS 2011); 80.4 (MICS 2009)

HEALTH SERVICES PROVISION

No. of hospitals

Total number of government hospitals under DGHS:
592 (DGHS 2014)

Government hospitals of secondary and tertiary levels under DGHS: 125 (DGHS 2014)

Government hospitals at upazila and union levels: 467 (DGHS 2014)

No. of private registered hospitals and clinics under DGHS:
2,983 (DGHS 2013)

No. of private registered diagnostic centers under DGHS:
5,220 (DGHS 2013)

Hospital beds

Total beds (in DGHS and registered private hospitals): 94,318

No. of hospital beds under DGHS (approved): 48,833 (DGHS 2014)

No. of hospital beds in private-sector (in private hospitals registered by DGHS: 45,485 (DGHS 2013)

Population per hospital bed (total beds in DGHS and registered private hospitals against estimated population of July 2014):
1,655 (DGHS 2014)

Teaching/training institutions for health (DGHS 2013)

No. of postgraduate medical teaching institutions: 33; Government: 23; Private: 10

No. of medical colleges: Total 90; Government: 35; Private: 55

No. of dental colleges: Total 27; Government: 9; Private: 18

No. of degree/diploma colleges for alternative medicine: Total 64; Government: 3; Private: 61

No. of nursing institutions offering masters degree to diploma: Total 131; Government: 57; Private: 74

No. of institutions providing midwifery training: 12

No. of training institutions for community-based skilled birth attendants: 47

No. of medical assistants training schools: Total 111; Government: 8; Private: 103

No. of institutes of health technology (IHT): Total 112; Government: 11; Private: 97; Government-Private: 4

No. of seats for medical courses

Postgraduate medical degree (MD, MS, Diploma, M.Phil. etc.): Total 2,270; Government 2,091; Private 169

FCPS, MCPS, etc.: ~400 per year

MBBS: Total 8,626;
Government 3,776; Private 4,850

BDS: Total 1,597;
Government 532; Private 1,065

Bachelor of Unani and Ayurvedic Medicine: 50

Bachelor of Homeopathic Medicine: 50

Nursing: Total 7,895;
Government 4,640; Private 3,255

Midwifery: 320

Medical Assistant: Total 6,821;
Government 716; Private 6,105

Medical technologist: Total 14,255; Government 2,684; Private 11,391; Government-Private 180

Health workforce

No. of sanctioned posts under DGHS:
124,216 (DGHS 2014)

No. of personnel and staff under DGHS (existing):
103,840 (DGHS 2014)

Physicians/dental surgeons

No. of registered physicians:
65,767 (HRM unit, MOHFW 2013)

No. of registered dental surgeons:
6,034 (BMDC 2013)

Distribution of doctors:
MOHFW 35%;
Other ministries 3%;
Private sector 62%
(HRM unit MOHFW 2013)

No. of doctors under DGHS (existing)
23,066 (DGHS 2014)

Doctors under DGFP (existing): 586 (sanctioned posts 1,110 DGFP 2013)

Total no. of doctors in DGHS and DGFP (MOHFW): 23,652

Estimated number of doctors available in the country: 53,929 (HRM unit, MOHFW 2013)

Nurses

No. of registered diploma nurses: 33,183 (HRM unit, MOHFW 2013)

Nureses currently available under MOHFW: 18,366 (DNS 2014)

No. of nurse-midwives in public sector (existing): 596 (DGHS 2013)

No. of trained skilled birth attendants: 7,265 (BNC 2013)

Family planning officers (DGFP 2014)

No. of family planning officers: 356 (sanctioned posts 485)

No. of assistant family planning officers: 280 (sanctioned posts 485)

Medical technologists under DGHS (existing) (DGHS 2014)

No. of sanitary inspectors: 436
No. of dental technologists: 501
No. of laboratory technologists: 1,498
No. of pharmacy technologists: 2,126
No. of radiographers: 629
No. of physical therapists: 144

Sub-assistant community medical officers

Under DGHS: 4,917 (DGHS 2014)
Under DGFP 2,492 (HRM unit, MOHFW 2013)

Community health workers (existing)

No. of community healthcare providers to work at community clinics 13,240 (HRM unit MOHFW 2013)

No. of domiciliary workers under DGHS: Total 22,045; Health inspectors (HI) 1,313; Assistant health inspectors (AHI) 4,042; Health assistants (HA) 16,690 (DGHS 2014)

No. of facility-based workers under DGFP: Total 5,358 (sanctioned posts 5,634); FWV 211 (sanctioned posts 464); Senior FWV 5,147 (sanctioned posts 5,710) (DGFP 2013)

No. of domiciliary workers under DGFP: Total 24,662 (sanctioned posts 28,000); Family planning inspectors (FPI) 3,549 (sanctioned posts 4,500); Family welfare assistants (FWA): 21,113 (sanctioned posts 23,500) (DGFP 2013)

Total no. of community health workers under MOHFW: 69,947 (DGHS 2014/DGFP 2013)

Population-health workforce ratio[1]

Population per physician: 2,894

No. of physicians per 10,000 population: 3.5

Population per MOHFW's nurse: 8,497

No. of MOHFW's nurses per 10,000 population: 1.2

Population per MOHFW's medical technologist: 29,034

No. of MOHFW's medical technologists per 10,000 population: 0.3

Population per MOHFW's community health worker: 2,603

No. of MOHFW's community health workers per 10,000 population: 3.8

Maternal health situation in urban area
Bangladesh Urban Health Survey 2013

Percentage distribution of women who had a live birth in past 3 years by number of antenatal care (ANC) visits

Number of ANC Visits	City corporation slum	City corporation non-slum	Other urban
None	27.9	10.0	18.5
1	7.2	4.6	9.4
2	14.8	11.3	16.3
3	21.6	16.2	20.0
4+	28.5	58.0	35.8
Percentage distribution of women who had a live birth in past 3 years by place of delivery and percentage delivered by C-section			
Delivered in health facility	36.7	65.1	52.2
Delivered by C-section	16.3	42.0	33.0
Percent distribution of births in past 3 years for which mothers received post natal care within 2 days of live birth from a medically trained provider			
Qualified doctor	22.5	50.3	39.4
Nurse/midewife/paramedics/FWV	11.5	10.1	10.6
CSBA/MA/SACMO	0	0	0
Non-medically trained provider	7.6	3.0	3.0

[1]Estimated mid-year population in 2014 was 156,056,258

CHAPTER 2

HEALTHCARE NETWORK UNDER MOHFW OF BANGLADESH

An intricrate web spread across the country

The public healthcare network of Bangladesh is an intricate web of public health departments, NGOs, and private institutions constitutes. Responsibilities and functions range from policy-planning, regulation, implementation, and healthcare delivery to medical education. The Ministry of Health and Family Welfare (MOHFW) is responsible for formulating national-level policy, planning, and decision-making in the provision of healthcare and education. The national-level policies, plans, and decisions are translated into actions by various implementing authorities and healthcare delivery systems across the country from national to the community level. The Ministry and its relevant regulatory bodies also have indirect control over the healthcare system of the NGOs and the private sector. However, this chapter gives a brief description of the organizational structure of the Directorate General of Health Services (DGHS) only. The chapter aims to describe the roles and responsibilities of the Directorate, its reporting units, and other affiliated organizations in the provision and promotion of healthcare services and health education.

Hierarchy of Personnel in the Ministry of Health and Family Welfare

The Honorable Minister for Health and Family Welfare heads the MOHFW. The Minister is assisted by the Honorable State Minister. As the principal executive of the Ministry, the Secretary works with a team of officials, including Additional Secretary, Joint Secretaries/Joint Chiefs, Deputy Secretaries/ Deputy Chiefs, Senior Assistant Secretaries/Senior Assistant Chiefs, and others (Figure 2.1).

Implementing authorities

There are 11 implementing authorities under the MOHFW. These are:

1. Directorate General of Health Services (DGHS)
2. Directorate General of Family Planning (DGFP)
3. National Institute of Population Research & Training (NIPORT)

The Ministry of Health and Family Welfare (MOHFW) is responsible for formulating national-level policy, planning, and decision-making in the provision of healthcare and education ...

4. Directorate General of Drug Administration (DGDA)
5. Directorate General of Health Economics Unit (HEU)
6. Directorate General of Health Engineering Department (formerly known as Construction Management & Maintenance Unit or CMMU) (HED)
7. Directorate of Nursing Services (DNS)
8. Revitalization of Community-based Healthcare Initiatives in Bangladesh Project (Community Clinics Project) (RCHCIB)
9. Essential Drugs Company Limited (EDCL)
10. Transport & Equipment Maintenance Organization (TEMO)
11. National Electro-medical & Engineering Workshop (NEMEW)

Figure 2.2 shows the implementing authorities under the Ministry of Health and Family Welfare.

Regulatory bodies

The regulatory bodies under the MOHFW include:

1. Bangladesh Medical & Dental Council (BMDC)
2. Bangladesh Nursing Council (BNC)
3. State Medical Faculty (SMF)
4. Homeo, Unani and Ayurvedic Board
5. Bangladesh Pharmacy Council (Figure 2.3)

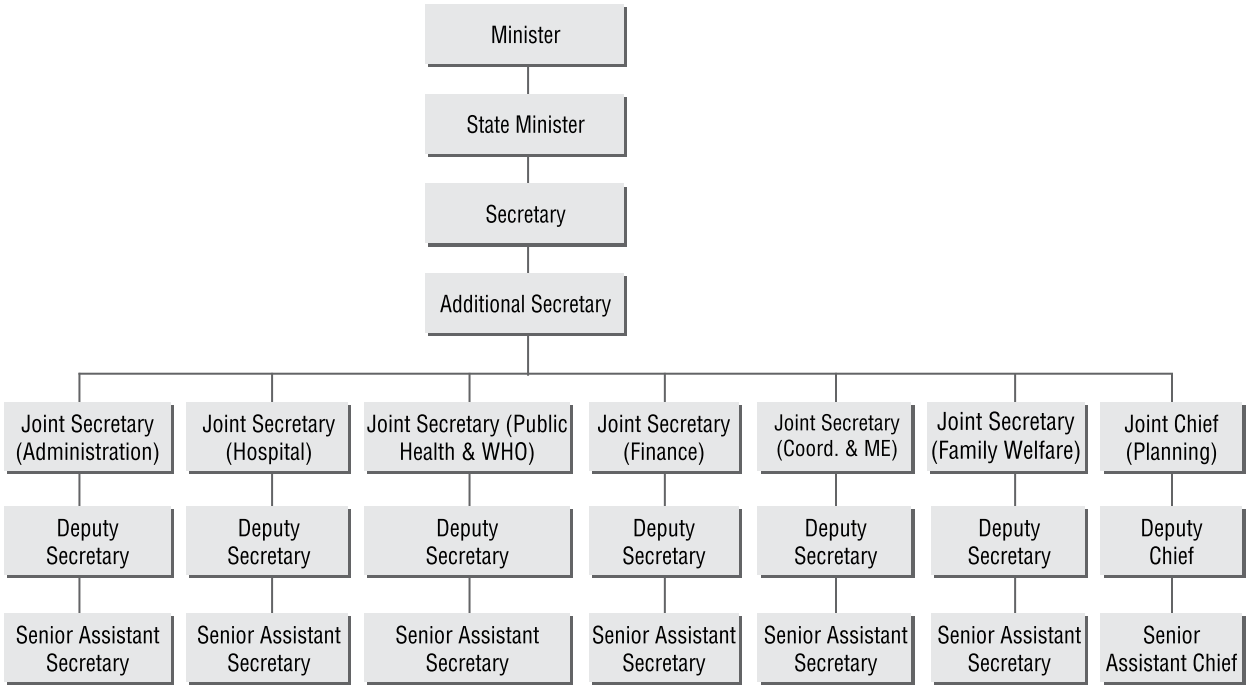


Figure 2.1. Hierarchy of personnel in the MOHFW

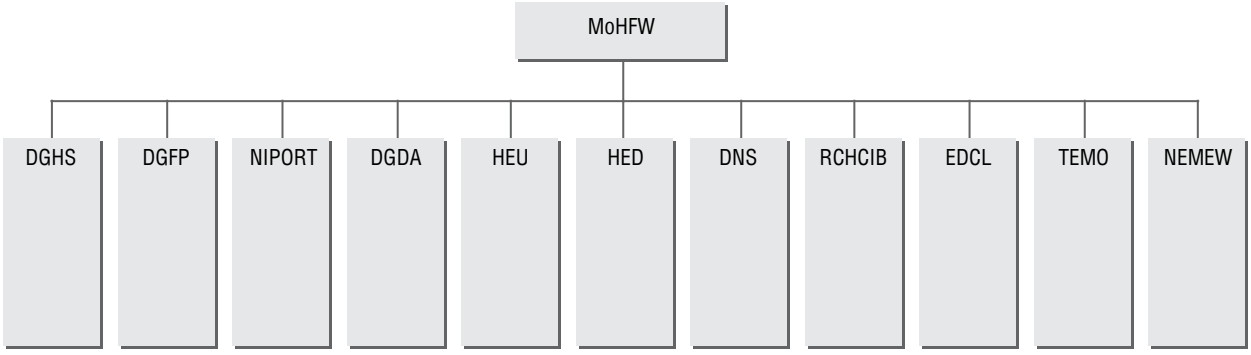


Figure 2.2. Implementing authorities under the Ministry of Health and Family Welfare (for full name of organization, see the section preceding this figure)

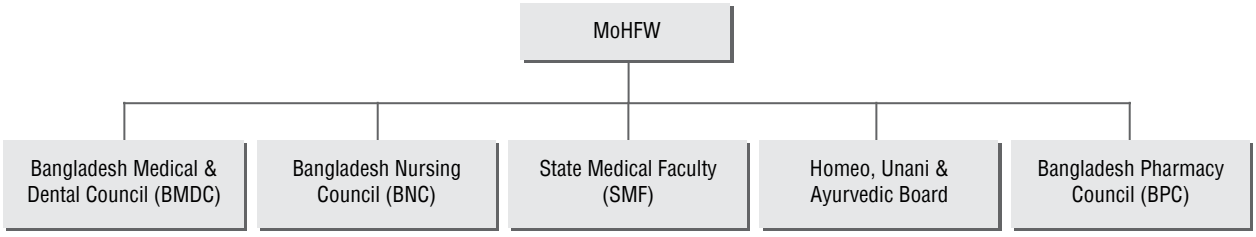


Figure 2.3. Regulatory bodies under MOHFW

Directorate General of Health Services

With more than one hundred thousand officers and staff members, the Directorate General of Health Services (DGHS) is the largest implementing authority under the MOHFW. In addition to the operation of healthcare-delivery systems in the country, the DGHS provides technical assistance to the Ministry in undertaking new programs and interventions and for improvements in the existing ones. The healthcare-delivery systems under DGHS extend from national to the community level. The activities are implemented under regular revenue setups and the development programs. The development programs are designed following a sector-wide, multi-year approach.

The administrative setup of the DGHS, as presented in Figure 2.4, indicates the diversity of activities carried out by the Directorate.

The healthcare-delivery systems under DGHS extend from national to the community level. The activities are implemented under regular revenue setups and the development programs. The development programs are designed following a sector-wide, multi-year approach ...

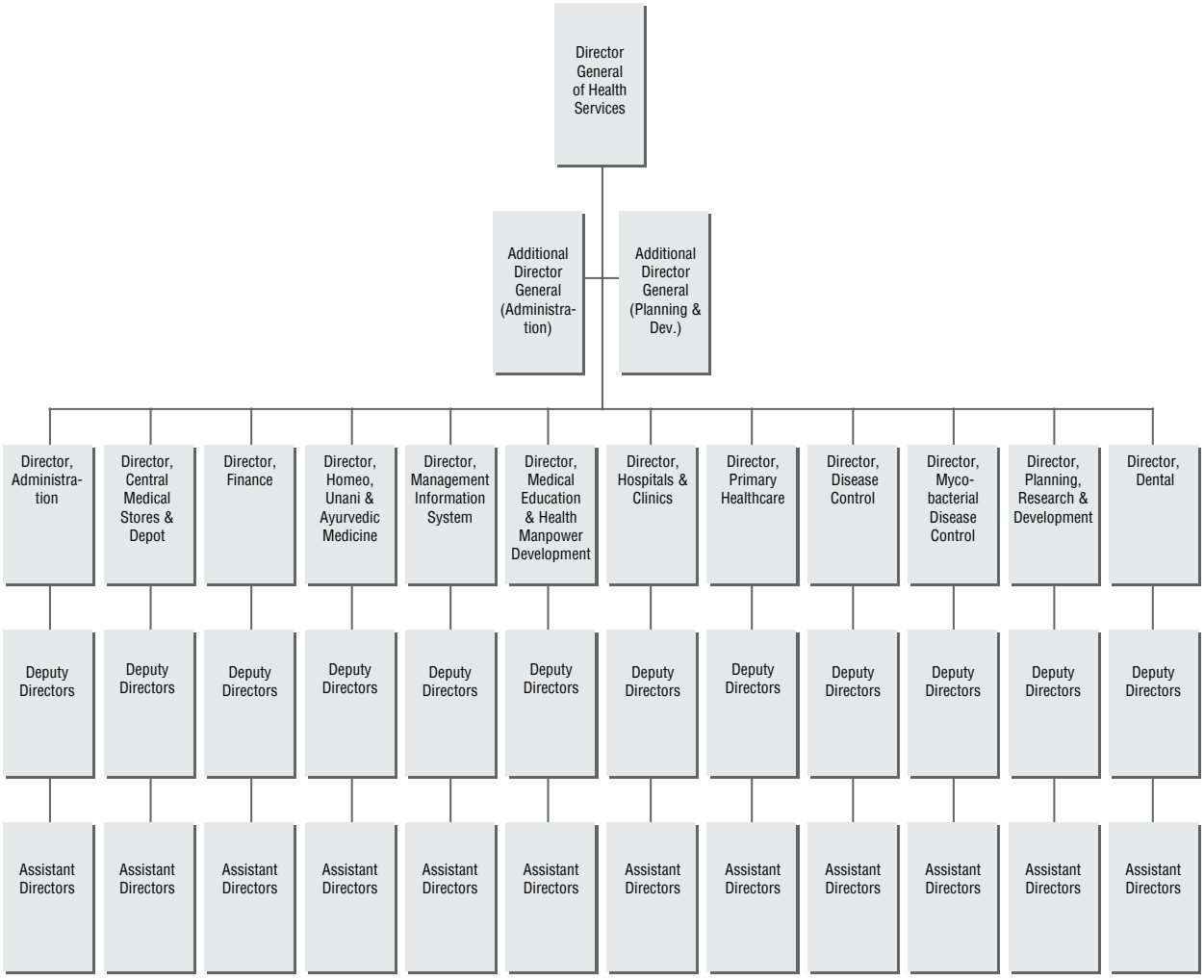


Figure 2.4. Administrative setup of the Directorate General of Health Services

Management structure and type of health facilities under DGHS

The healthcare infrastructure under the DGHS comprises six tiers: national, divisional, district, upazila (subdistrict), union, and ward. At the national level, there are institutions both for public health functions as well as for postgraduate medical education/training and specialized treatment to patients.

A divisional director for health in each division governs activities, and is assisted by deputy directors and assistant directors. There is one infectious disease hospital and one or more medical college(s) at the divisional headquarters. Each medical college has an attached hospital. Some divisional headquarters also possess general hospitals and institutes of health technologies. Divisional institutes provide basically the tertiary-level care.

The civil surgeon (CS) is the district health manager responsible for delivering secondary and primary care services. In each district, there is a district hospital. Some district hospitals have superintendents to look after the hospital management. In others, civil surgeons look after the district hospitals. Some of the district headquarters have medical colleges with attached hospitals, medical assistants training schools, and nursing training institutes.

The upazila health & family planning officer (UH&FPO) is the health manager at the upazila level. S/he manages all public-health programs, especially the primary healthcare services in the upazila and also looks after the upazila hospital (having 30 to 50 beds). The upazila where the district headquarter is located does not have an upazila hospital, and there, the upazila-hospital service is provided by the district hospital.

At the union level, three kinds of health facilities exist: rural health centers, union subcenters, and union health & family welfare centers (UHFWCs). Each union health facility employs a medical doctor among other staff. Only outdoor services are available at union level. All union facilities have sub-assistant community medical officers to provide health services to the people.

The MOHFW established community clinics (CCs) at the ward levels. One such community clinic is planned for every 6,000 people, with a total 18,000 CCs in the country. The existing union and upazila facilities (~4,500) also provide community clinic services. The RCHCIB project is responsible for operationalizing the CCs. These facilities are mainly responsible for delivering primary healthcare services, like EPI, treatment for common diseases (pneumonia, fever, cough, etc), family planning services, health education, and first-aids and serve as the first contact points for patients. Some of the community clinics have also started services for normal delivery through CSBA at community clinic. The MOHFW aims to develop the CCs as the unit of comprehensive healthcare-seeking behavior change in the respective local communities through a sense of ownership and provision of leadership by community people. At the ward or village level, there are also domiciliary health workers – one for every 5,000 to 6,000 people. There are 26,482 sanctioned posts of domiciliary workers under DGHS: 20,881 health assistants (HA), 4,202 assistant health inspectors (AHI), and 1,399 health inspectors (HI). The Directorate General of Family Planning (DGFP) also has domiciliary family planning staff working at the ward levels. Currently, the domiciliary staff members from DGHS and DGFP share the responsibility of running the independent community clinics, along with the community healthcare provider (CHCP).

Figure 2.5 shows the types of organizations and facilities under DGHS from national to the ward level, with managerial hierarchy.

The Ministry recruited 13,240 full-time community healthcare providers to run the community clinics. All of them have been trained to provide better care to the healthcare-seekers. The CHCPs have also been provided with laptop computers and Internet connection to update local health data in online control database for evidence-based decision-making and future use.

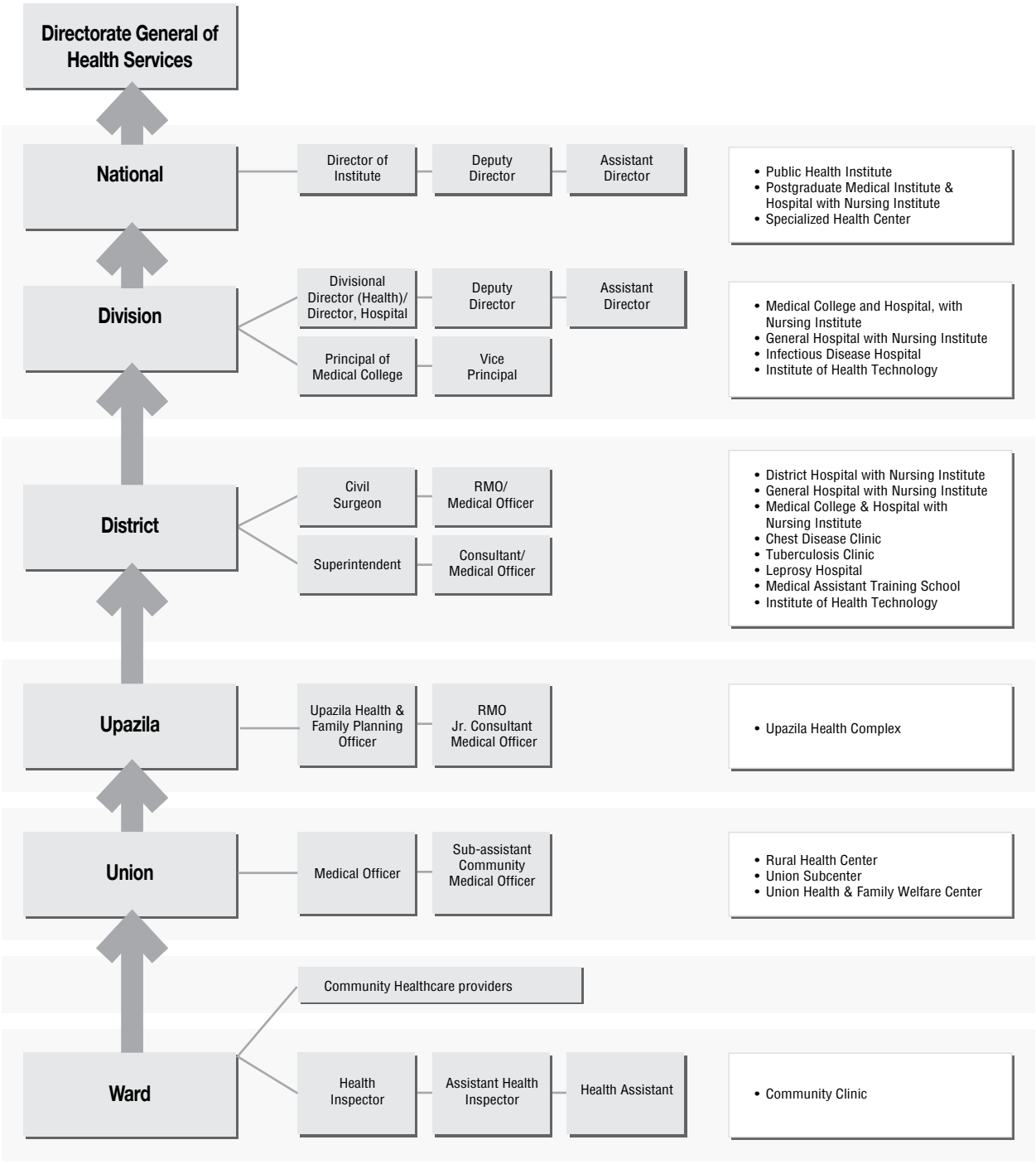


Figure 2.5. Types of facilities from national to the ward level, with managerial hierarchy

CHAPTER 3

HEALTH-RELATED MILLENNIUM DEVELOPMENT GOALS

Bangladesh excelled MDG 4 target of reducing child mortality

As set by the United Nations in 2000, the Millennium Development Goals (MDGs) have targets in various human development categories, which include health improvements, poverty reduction, environmental sustainability, and developing global partnerships by 2015. In September 2000, leaders from 189 member-nations of the UN agreed to meet the following 8 development goals, five (MDG 1, 4, 5, 6, and 7) of which are health-related.

MDG 1: Eradicating extreme poverty and hunger (health-related)

MDG 2: Achieving universal primary education

MDG 3: Promote gender equality and empower women

MDG 4: Reduce child mortality (health-related)

MDG 5: Improve maternal health (health-related)

MDG 6: Combat HIV/AIDS, Malaria, and other diseases (health-related)

MDG 7: Ensure environmental sustainability (health-related)

MDG 8: Develop a global partnership for development.

Bangladesh is making good progress in almost all of the health-related MDGs. Some are already attained. In others, the country is well on track. However, a few will require attention to make substantial improvement. In this chapter, an overview of the current progress of Bangladesh on health-related MDGs is presented. The progress on each of the health-related MDGs has been shown in separate tables. The tables show the specific health-related MDGs, country benchmark, current progress, and targets. Asterisks have been used for showing status of the country. Single asterisk (*) means "on track" and double asterisks (**) mean "goal met."

MDG 1: Eradicating extreme poverty and hunger

Table 3.1 shows the progress of Bangladesh in MDG 1. From 1990 prevalence of 66% underweight children, the figure came to down to 35% by 2011, which is a 47% reduction against the required 50% reduction by 2015. According to the World Bank estimate, the percentage of population below minimum level of dietary energy consumption came down to 17% in 2011 from a figure of 28% in 1990. This is a 39% reduction against expected 50% by the year 2015. The progress in the latter, though appears a bit slower, it may be certainly said that Bangladesh is on track for these two indicators of Goal 1.

Table 3.1. Goal 1: Eradicate extreme poverty and hunger

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by half the proportion of people who suffer from hunger	Prevalence of underweight among children <5 years of age (%)	66.0 (1990)	36.4 (BDHS 2011)* 35.0 (UESDS 2013)	33.0 (2015)
	Population below minimum level of dietary energy consumption (%)	28.0 (1990)	17.0 (WB 2011)*	14.0 (2015)

MDG 4: Reduce child mortality

Bangladesh already attained the target of MDG 4 about reduction of child mortality rate. This is revealed in a recent UN Countdown 2014. The report shows that Bangladesh's under-5 mortality rate has been dropped to stunning 41 per 1,000 livebirths by 2012 from 144 per 1,000 livebirths in 1990 (Table 3.2). This is a 71% reduction against the target of 66% reduction by 2015. According to the same report, the current infant mortality rate of Bangladesh is 33 per 1,000 livebirths, and the neonatal mortality rate is 24 per 1,000 livebirths. The share of neonatal mortality rate is 59% of under-5 mortality rate and 80% of infant mortality rate. Bangladesh pledged to prevent an additional 108,000 deaths annually to reduce the national under-five mortality rate to 20 per 1,000 livebirths by 2035. One of the important indicators of MDG 4 is ensuring universal coverage of measles vaccination among the 1-year(s) old children by by 2015. Table 3.2 shows that the current coverage rate is 86%. So, Bangladesh is well on track for this indicator also.

MDG 5: Improve maternal health

The latest estimate by United Nations shows the current maternal mortality to be 170 per 100,000 livebirths. The Bangladesh Maternal Mortality Survey 2010 by NIPORT showed the MMR to be 194 per 100,000 livebirths which was 574 per 100,000 livebirths in 1990 (Table 3.3). Maternal mortality has been dropped by 70% against the 2015 target of 75% (143 per 100,000 livebirths). Other indicators, viz. births attended by skilled health personnel, birth rate among adolescent mothers, antenatal care coverage, and unmet need for family planning (%) will require more attention (Table 3.3). The contraceptive prevalence rate (%) is moving on track as revealed by a 61% rate against a national 2015 target of 72% (Table 3.3).

MDG 6: Combat HIV/AIDS, malaria, and other diseases

Table 3.4 shows the progress on MDG 6 relating to HIV/AIDS, malaria and tuberculosis. Bangladesh is consistently a low prevalent country with regard to HIV/AIDS and STDs. The National AIDS and STD

Table-3.2. Goal 4: Reduce child mortality

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by two-thirds the mortality rate among under-five children	Death rate among under-five children/1,000 livebirths	144.0 (1990)	41.0 (UN 2013)** 44.0 (SVRS 2011) 53.0 (BDHS 2011)	48.0 (2015)
	Infant mortality rate/1,000 livebirths	94.0 (1990)	33.0 (UN 2013)* 35.0 (SVRS 2011) 43.0 (BDHS 2011)	31.3 (2015)
	1-year old children immunized against measles (%)	52.0 (1991)	85.5% (BECES 2012)* 87.5 (BDHS 2011)	100.0 (2015)

Table-3.3. Goal 5: Improve maternal health

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by three-quarters the maternal mortality ratio	Maternal mortality ratio/100,000 livebirths	574.0 (1990)	170.00 (UN 2013)*	143.5 (2015)
	Births attended by skilled health personnel (%)	7.0 (1990)	26.5 (BMMS 2010) 43.5 (MICS 2012-2013)	50.0 (2015)
Ensure, by 2015, universal access to reproductive healthcare	Contraceptive prevalence rate (%)	39.9 (1991)	61.2 (BDHS 2011)* 61.8 (MICS 2012-2013)	72.0 (2016)
	Birth rate among adolescent mothers/1,000 women	77.0 (1990/91)	105.0 (BMMS 2010) 83.0 (MICS 2012-2013)	-

Table 3.3. continued

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
	Antenatal care coverage (at least one visit by skilled health professional) (%)	27.5 (1993)	54.6 (BDHS 2011) 58.7 (MICS 2012-2013)	100.0 (2015)
	Antenatal care coverage (at least four visits) (%)	05.5 (1993)	25.5 (BDHS 2011) 24.7 (MICS 2012-2013)	100.0 (2015)
	Unmet need for family planning (%)	19.4 (1993)	13.5 (BDHS 2011) 13.9 (MICS 2012-2013)	7.6 (2016)

Program (2011) estimates a current prevalence of 0.7% HIV/AIDS and STD-affected victims among the high-risk population. There is a very slow rise in the number of victims. So, the situation is well on track. However, access to antiretroviral drugs among the population with advanced HIV infection will require improvement. In Bangladesh, malaria is endemic in only 13 districts out of 64, from where 80% of the national malaria burden is reported. The malaria prevalence and death rate have been estimated based on the reported malaria cases and deaths at the Communicable Disease Control Department of the Directorate General of Health Services of Bangladesh. Keeping in view the MDG 6 target, the national 2015 malaria target was set at 50% reduction of malaria prevalence and deaths from 2008 levels. Current estimates show that both targets have been achieved (prevalence is 18.4 per 100,000 population against the 2015 target of 29.3 per 100,000 population; malaria death rate is 0.007 per 100,000 population against the 2015 target of 0.053 per 100,000 population). Targets have also been achieved for indicators "Under-five children sleeping under insecticide-treated bednets (94.4% of under-five children sleep under insecticide-treated bednets against a target of 90%)" and for "Under-five children with fever treated with appropriate anti-malarial drugs" (89% under-five children were treated against a target of 90%). For tuberculosis, the 2015 MDG targets for case notification rate and cure rate have been achieved. Current TB (all forms) prevalence is 411 per 100,000 population (against the target of 320 per 100,000 population) and TB death rate is 45 per 100,000 population (against a target of 38 per 100,000 population). For these two indicators also, the country is on track.

MDG 7: Ensure environmental sustainability

Access by all people to safe drinking-water is almost reaching the target. The Bangladesh Bureau of Statistics in its Report 2011 of Sample Vital Registration System shows that over 98% of the Bangladesh population has now access to safe drinking-water (Table 3.5). The SVRS 2011 showed only 63.6% coverage.

Health in the post-2015 development agenda

As the dateline for MDGs is coming to closer, there are active debates ongoing among the development organizations, countries and activists to prepare a set of development goals for the post-2015 period. The debates were triggered by the UN Secretary General in the 2010 High Level Meeting in the United Nations General Assembly on MDGs (September 2010), where he called for starting to think on the post-2015 development goals on the theme "Realizing the future we want". Since then, events, consultations, conferences, meetings, etc. are continuing. One most important is Rio20+ held in Reo de Janeiro (June 2012). Unconventional to other years, the World Health Organization put this issue in May 2013 World Health Assembly in the plenary speeches of head of delegation of Member States. In September 2012, a high level dialogue was held in Botswana in a global thematic consultation on this issues. The informal consultation was co-led by WHO and UNICEF in collaboration with Governments of Botswana and Sweden, and a UN inter-agency group, including UNAIDS, UNFPA, UNDP, UNDESA

In some of the indicators, Bangladesh excelled the MDG targets ... for others, the country is on track ...

Table-3.4. Goal 6: Combat HIV/AIDS, malaria, and other diseases

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Halt and begin to reverse the spread of HIV/AIDS	HIV prevalence among population aged 15-24 years (%)	0.005 (1990)	0.7% (NASP 2011)*	Halt (2015)
Ensure, by 2010, universal access to treatment for HIV/ AIDS for all those who need	Population with advanced HIV infection with access to ARV drugs (%)	-	45.0 (UNGASS 2012)	100.0 (2015)
Halt and begin to reverse the incidence of malaria and other major diseases	Malaria prevalence/100,000 population	58.5 (2008)	18.4 (DGHS 2012)** Estimated based on reported malaria cases	29.3 (2015)
	Malarial death rate/100,000 population	0.106 (2008)	0.007 (DGHS 2012)** Estimated based on reported malaria cases	0.053 (2015)
	Under-five children sleeping under insecticide-treated bednets in endemic areas (%)	81.0 (2008)	94.4 (DGHS 2012)**	90.0 (2015)
	Under-five children with fever treated with appropriate antimalarial drugs (%)	60.0 (2008)	89.0 (DGHS 2011)*	90.0 (2015)
	TB (all forms) prevalence rate/100,000 population	639.0 (1990)	411.0 (DGHS 2011)*	320.0 (2015)
	TB death rate/100,000 population	76.0 (1990)	45.0 (DGHS 2011)*	38.0 (2015)
	New smear+ve TB case notification rate under DOTS (%)	21.0 (1994)	68.0 (NTP 2013**)	>70.0 (2015)
	TB cure rate (%) with DOTS	73.0 (1994)	92.0 (NTP 2012)**	>85.0 (2015)

Table 3.5. Goal 7: Ensure environmental sustainability

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by half the percentage of people without sustainable access to safe drinking-water and basic sanitation (%)	Population using improved drinking-water sources (%)	78.0 (1990)	98.2 (SVRS 2011)* 97.9 (MICS 2012-2013)*	100.0 (2015)
	Population using improved sanitation facility (%)	39.2 (2006)	55.9 (MICS 2012-2013)* 63.6 (SVRS 2011)	100.0 (2015)

and OHCHR (Office of the High Commission for Human Rights). The dialogue discussed four key thematic issues, viz. lessons learnt from the health-related MDGs; health priorities post-2015; defining future health goals; and measuring progress towards achievement. In March 2013, the South-East Asia Regional Office of the WHO organized a regional consultation in Bangkok to discuss and compile recommendations of different national consultations held on this issue and in Bangladesh, India, Indonesia, and Timor-Leste. The UN Secretary General Ban Ki Moon constituted a

High Level Panel of Eminent Persons (HLP-EP) to give him advice on the same. An overview of all the discussions shows a common focus to issues, like poverty, hunger, water, sanitation, education, and healthcare to go beyond goals set in 2015-MDGs for promoting sustainable development goals. The high level panel in its report (May 2013) recommended 2030 as the dateline for the next round of development goals. It recommended 12 goals and 54 targets. The health goal is recommended as "ensure healthy lives", with the proposed outcomes of ending preventable infant and under-5 mortality, increasing coverage of immunization, decreasing maternal mortality, ensuring universal sexual and reproductive health and rights, and reducing burden of diseases from HIV/AIDS, TB, malaria, neglected tropical diseases and priority NCDs. The panel also put MDG 8, i.e. a stronger global partnership at the heart of all recommendations. Another inter-governmental committee of experts mandated by Rio20+ proposed for holding the global temperature rise to less than 2°C. There is strong recommendation from health communities to include universal health coverage. Bangladesh is also sounding its voice to consider as guiding principle the definition of health to set health agenda in the post-2015 development goals. Health is defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity", inclusive of every citizen of the world. Bangladesh is also putting emphasis on target setting pointing to fallacies of MDG targets. The argument which Bangladesh is pushing forward is inherent inequality principle of MDG targets. For example, the 1990 maternal mortality ratio (MMR) baseline figures of Uzbekistan, Viet Nam, Sierra Leone, and Bangladesh were 59; 240, 1,300 and 574 respectively. By 2015, if all of these countries attain MDG 5, the MMR of these countries will be 15; 60; 325 and 144 respectively. That means even after 2015, more mothers per 100,000 livebirths will be allowed to die in Sierra Leone, and Bangladesh than in Uzbekistan and Viet Nam. Bangladesh is proposing for setting target in a way that will say: "All countries of the world will drop MMR to X per 100,000 by 2030." If this kind of target is adopted, countries far lagging behind, would need more effort, more resource and more attention to upgrade their situation, both from national leaderships as well as from global bodies. However, citizens of every country of the world will enjoy equal opportunity and human rights. A common agreement is assumed to take shape to develop an overarching top post-2015 goal as "Well-being for all." Bangladesh recommended to include health as one of the priority areas, and to include within health "unfinished health-related MDGs, NCDs, Universal Health Coverage, Poverty & Hunger Elimination, and Primary Healthcare, inclusive of community participation and empowerment as well as holistic multisectoral engagement." Bangladesh further emphasized to include "information system—both health and non-health, to capture all the basic information under a broadened CRVS system to register and track each and all citizens fully, timely, and accurately to generate evidence as systematic continued process, locally, subnationally, nationally, and globally as an integral component." A globally-agreed effective and comprehensive set of UN post-2015 development goals will be available before we reach 2015, it is hoped.

CHAPTER 4

PRIMARY HEALTHCARE

Local-level management improved further

Among countries that provide free medical services to the people at the community level through various public health facilities, Bangladesh has a top-ranking possition in this regard. The primary healthcare is provided through an extensive network of health facilities extended down to the community level with upward referral linkage and a set of government-funded permanent community healthcare workers. The public-sector healthcare network under the Ministry of Health and Family Welfare is shown in Table 4.1.

The community clinics are the lowest-level static health facilities located at the ward level. These have upward referral linkages with health facilities located at the union and upazila levels. There are 483 government hospitals at the upazila level and below, which altogether have 19,855 hospital beds. There are 14,201

Table 4.1. Primary healthcare centers run by DGHS at the upazila level and below (20 December 2014)

Type of facility	Type of service	Total No. of facilities	Total beds
Upazila health complex (51-bed)	Hospital	1	51
Upazila health complex (50-bed)	Hospital	312	15600
Upazila health complex (31-bed)	Hospital	100	3100
Upazila health complex (10-bed)	Hospital	8	80
Upazila health complex (bed not yet approved)	Hospital	3	0
Total Upazila Health Complex		**424**	**18831**
Sadar Upazila health office	Outpatient	60	-
31-bed hospital (Other than upazila health complexes)	Hospital	4	124
Trauma center	Hospital	5	100
20-bed hospital	Hospital	30	600
10-bed hospital	Hospital	20	200
Union subcenter	Outpatient	1275	-
Union health and family welfare center	Outpatient	87	-
Community clinic	Outpatient	12779	-
Summary			
Total hospitals		483*	19855**
Outpatient centers		14201	
Total health facilities (upazila level & below)		14684	

* In some cases indoor services have not yet started

** For various reasons the number of actually functional bed may slightly vary with the number of approved bed as mentioned here. The number of functional bed is frequently changed and hence, readers are advised to see the "organization registry" through our website (www.dghs.gov.bd) to find the updated information.

outpatient centers at the upazila level and below; among them12,779 are functioning community clinic.

Community clinics deserve special mention due to flagship nature of the program. In addition to the community clinics, important components of primary healthcare, among others, include domiciliary healthcare, essential service delivery, along with urban primary healthcare, maternal healthcare (inclusive of some screening programs for women's health), child healthcare, school health program, and adolescent health program. This chapter makes an overview of these components.

Community clinics

The Government of Bangladesh, in 1996-2001, planned to establish 18,000 community clinics (CCs) for provision of primary healthcare services to rural people–13,500 as independent new clinics and 4,500 in the existing union and upazila-level health facilities. From 1998 to 2003, 10,723 community clinics were constructed, of which 8,000 were made functional. The Government resumed the CC project with the name "Revitalization of Community-based Healthcare in Bangladesh." As of now, 12,779 independent community clinics have been started. Keeping in view the target of setting up 13,500 independent CCs, initiative was undertaken to recruit 13,500 community healthcare providers (CHCP), one for each CC. However, due to administrative reasons, 13,240 could be recruited. In addition to the CHCP, the existing domiciliary staff members of DGHS and DGFP also provide service to the community clinics three working days a week alternately. The community clinics provide the basic healthcare package to the community people, viz. maternal and child healthcare, reproductive health and family-planning services, immunization, nutrition education, micronutrient supplementation, health education and counseling, communicable disease control, treatment for minor ailments and first-aid, and referral to higher-level health centers. The community clinics are managed by a 15 to 17-member management committee selected from the respective communities. At least 4 members must be female. There are also three community support groups each comprising 15-17 members to work as community health volunteers (non-paid) to assist the management committee and community clinic. The local government representatives are included in the management committee. By April 2014, all community clinics received Internet connection through a laptop and wireless modem to help collection of local health-related data, provide telemedicine service, community health education, and certain other ICT-based health solutions.

The community clinics provide the basic healthcare package to the community people, viz. maternal and child healthcare, reproductive health and family-planning services, immunization, nutrition education, micronutrient supplementation, health education and counseling, communicable disease control, treatment for minor ailments and first-aid, and referral to higher-level health centers. ...

Figure 4.1 shows the government expenditure for supply of medicines to the community clinics in different fiscal years. The amount of allocation per community clinic for medicine supply was BDT 0.07 million in 2009-2010, BDT 0.09 million in 2010-2011, and BDT 0.11 million in each of 2011-2012 and 2012-2013. Items of medicines supplied in 2009-2010 were 25. In 2010-2011,

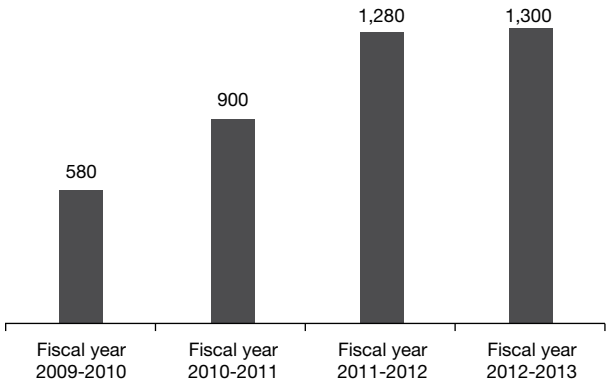


Figure 4.1. Government expenditure (BDT in million) for supply of medicines to community clinics

the list included 28 items but from 2011-2012, items were increased to 30.

Figure 4.2 shows the number of patients given treatment in and referred from community clinics in different time periods. Number of service-recipients is sharply increasing and almost doubled from 2011 to 2012. Since re-inception in 2009, about 15 million patients received service from community clinics. It is estimated that, in 2013, twenty-two patients, on average, received service from each community clinic daily, which was 12 patients per day per community clinic in 2009.

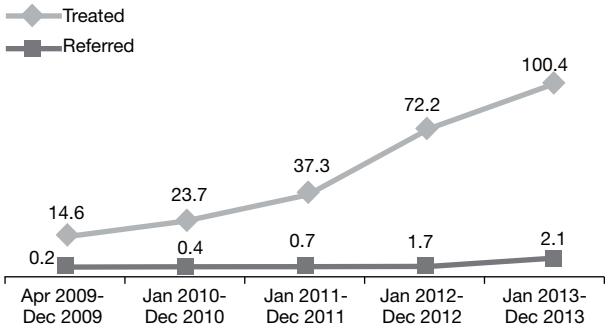


Figure 4.2. No. of clients (in million) treated (total 248.3 million) and refered (total 9.1 million) from community clinics in different time period

Community clinic is an unprecedented instance of community participation and public-private partnership. Being inspired by community participation, some UN agencies and NGOs have started working with the community clinic project. Many other organizations are also coming forward to working as the days are passing. A summary of the key examples of such partnership is provided in the annex.

Community clinic is certainly a pro-people health initiative led by the Government. If quality health services can be ensured near doorsteps even at the remotest corner of the country, people will spontaneously seek necessary service from the well-trained care providers at the health facilities, instead of the untrained traditional healers. It is expected that community clinics will ensure provision of quality healthcare for the mass people of rural Bangladesh, particularly the poor, vulnerable, and the underprivileged and will contribute to the achievement of the health development goals under MDGs and in the post-2015 period.

Domiciliary service in rural Bangladesh

There are domiciliary workers—one for every 5 to 6 thousand people at the ward or village level. Under DGHS, there are 26,482 sanctioned posts of domiciliary workers, of whom 20,881 are for health assistants (HA), 4,202 for assistant health inspectors (AHI), and 1,399 for health inspectors (HI). As of now, 83.25% posts were filled up. Like DGHS, the DGFP also has domiciliary workers to work at the ward or village level. These staff members are called family planning inspectors (FPI) and family welfare assistants (FWA).

Essential service delivery and urban primary healthcare

Under the Health, Nutrition and Population Sector Development Program (HPNSDP) 2011-2016, there is an operational plan, namely "Essential Service Delivery" mainstremed under DGHS to help improve service, particularly at the upazila level and below and compliment urban primary healthcare. The areas of services include limited curative care, support services and coordination, medical waste management, urban health, mental health, and tribal health. The urban primary healthcare in Bangladesh is principally the responsibility of the Ministry of Local Government, Rural Development and Cooperatives (MOLGRD) carried out through the city corporations and municipalities.These local bodies run a number of small to medium-sized hospitals and outdoor facilities. Besides, two large-scale primary healthcare projects, viz. Urban Primary Healthcare Project (UPHCP) and Smiling Sun Franchise Program run by NGOs in collaboration with the city corporations and with the financial assistance from donors. The clients in these latter projects also share a part of the cost through service-charge. There is a concern among the public health communities that there is a need

Urban Primary Healthcare Project (UPHCP) and Smiling Sun Franchise Program are run by NGOs in collaboration with the city corporations and with the financial assistance from donors. ...

for better coordination between the two ministries, viz. MOHFW and MOLGRD, with regard to urban primary healthcare, although MOHFW contributes to urban primary healthcare through outpatient services distributed through its secondary, tertiary and specialized hospitals located in the urban settings. Besides, there are 35 urban dispensaries and 23 school health clinics in some of the bigger cities and municipalities. To respond to the concerns for need of better coordination between MOHFW and MOLGRD with regard to urban primary healthcare, the MOHFW included in its HPNSDP 2011-2016 a component named "urban health" under the operational plan "Essential Service Delivery." This urban health component aims at designing programs through maintaining better coordination and collaboration with the city corporations, municipalities, UPHCP, Smiling Sun Franchise Program, other NGOs and stakeholders.

Maternal healthcare

The Ministry of Health and Family Welfare of Bangladesh, in collaboration with UNICEF, is undertaking facility-based Emergency Obstetric Care (EOC) Program in all the districts of Bangladesh to improve the maternal health situation, targeting to achieve the Millennium Development Goal 5. All the government medical college hospitals, district hospitals, upazila hospitals, and maternal and child welfare centers (MCWCs) provide obstetric care service, inclusive of emergency obstetric care. A number of private clinics or hospitals and health-related NGOs are also partners of this program. Obstetric care is classified into two categories in this program, viz. Comprehensive Emergency Obstetric Care (CEmOC) and Basic Emergency Obstetric Care (BEOC). Currently, all medical college hospitals, 59 district hospitals, 3 general hospitals, 132 upazila health complexes, and 63 MCWCs provide CEmOC, and rest of the upazila health complexes provide BEOC. The list also includes NGOs and private care providers from a number of districts. Under a program, jointly operated by the Management Information Systems (MIS) of DGHS and UNICEF, data are collected from the EOC facilities. For this publication, data from 621 sources, including 14 medical college hospitals, 62 district/general hospitals, 411 upazila health complexes, 53 maternal and child welfare centers, private hospitals from 45 districts, NGOs from 33 districts, and 3 other types of hospitals have been used for analysis to translate into a format called United Nations Process Indicators. Table 4.2 summarizes the sources of data.

Table 4.2. Number of data sources used for this publication on emergency obstetric care (2013)

Type of hospital	No.	Percentage
Medical college hospital	14	2.3
District and general hospital	62	10.0
Upazila health complex	411	66.2
MCWC	53	8.5
Districts from where private care providers sent data	45	7.2
No. of districts from where NGO care providers sent data	33	5.3
Other health facilities	3	0.5
Total	621	100.0

Figure 4.3 shows the number of different obstetric care encounters and clients served by the emergency obstetric facilities in Bangladesh. Detailed information with division-wise disaggregation is provided in the annex.

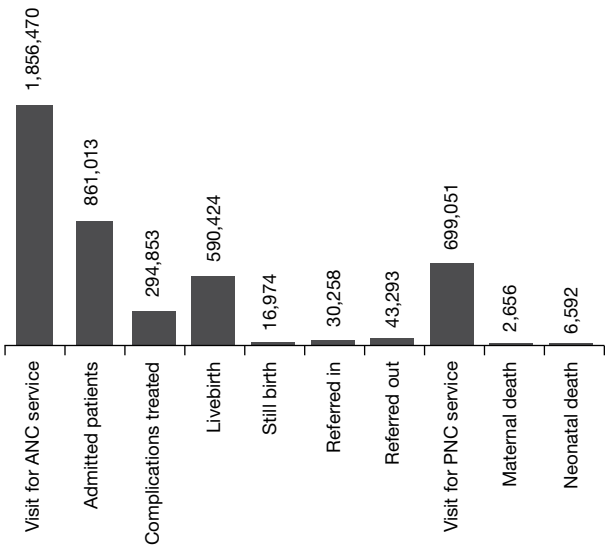


Figure 4.3. Number of different obstetric care encounters or clients served by the emergency obstetric care facilities in Bangladesh (2013)

Figure 4.4 reveals that 599,373 institutional deliveries were reported in 2013, of which normal delivery accounted for 57.5%, cesarean section accounted for 40.7%, and vaginal breech and forceps delivery collectively accounted for 1.8%.

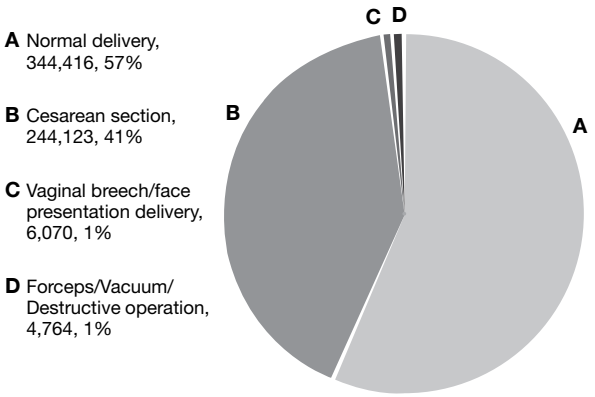


Figure 4.4. Distribution of reported institutional deliveries by type (n=599,373)(2013)

Figure 4.5 shows the outcome of obstetric care of the emergency obstetric care facilities for the year 2013. Maternal death as % of total deliveries was 0.4%, neonatal death as % of all livebirths was 1.1%, birth at EmOC facilities as % of all births was 20.3%, percentage of met need for EmOC was 66.5%), and case-fatality rate (CFR) as % of all maternal complications treated was 0.9%.

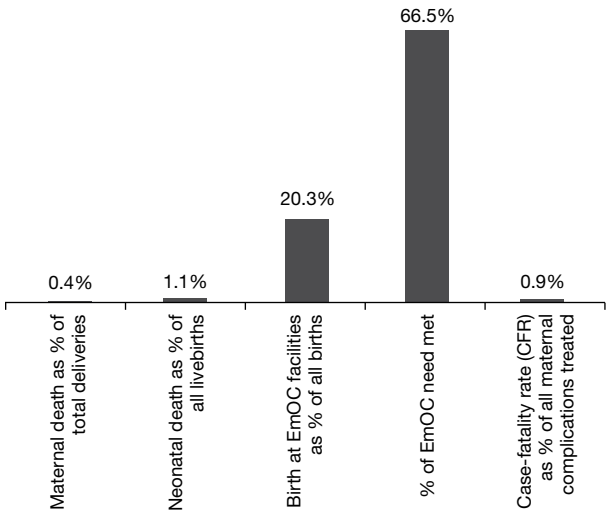


Figure 4.5. Outcome of obstetric care in EmOC facilities (2013)

Table 4.3 shows the distribution of obstetric care services provided by the government and non-government emergency obstetric care facilities. Detailed profile has been provided in the annex.

Table 4.3. Obstetric care services provided by the government and non-government emergency obstetric care facilities (2013)

UN process indicator	Government facility		Non-government facility		Total	
	No.	%	No.	%	No.	%
Visit for ANC service	1331982	71.7	524488	28.3	1856470	100.0
Admitted patients	624565	72.5	236448	27.5	861013	100.0
Complications	211171	71.6	83682	28.4	294853	100.0
Normal delivery	269464	78.2	74952	21.8	344416	100.0
Forceps/Vacuum/Destructive operation	3997	83.9	767	16.1	4764	100.0
Vaginal breech/Face delivery	4486	73.9	1584	26.1	6070	100.0
Caesarean section	112018	45.9	132105	54.1	244123	100.0
Total deliveries	389965	65.1	209408	34.9	599373	100.0
Livebirth	381694	64.6	208730	35.4	590424	100.0
Stillbirth	15169	89.4	1805	10.6	16974	100.0
Other surgeries	22652	88.7	2877	11.3	25529	100.0
Referred in	23817	78.7	6441	21.3	30258	100.0
Referred out	37909	87.6	5384	12.4	43293	100.0

Table 4.3. continued

UN process indicator	Government facility		Non-government facility		Total	
	No.	%	No.	%	No.	%
PNC service	494923	70.8	204128	29.2	699051	100.0
Maternal death	2320	87.3	336	12.7	2656	100.0
Neonatal death	6048	91.7	544	8.3	6592	100.0

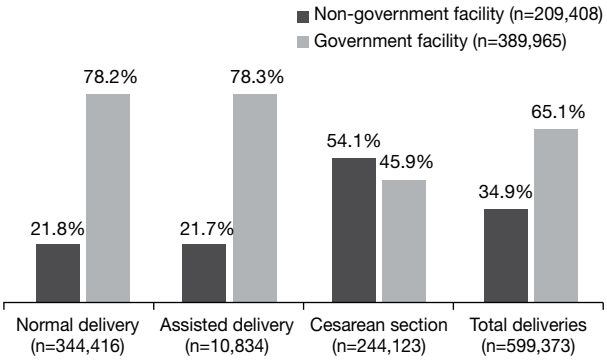


Figure 4.6. Distribution of delivery by type between government and non-government (private, NGO, other) health facilities (2013)

Figure 4.6 shows the distribution of normal, assisted, cesarean and total deliveries between government and non-government health facilities in 2013. While most of the total (65.1%) and normal deliveries (78.2%) took place in the government facilities, the percentage of cesarean section was more in private health facilities (54.1%).

Table 4.4 shows the distribution of normal, assisted, cesarean and total deliveries within government and non-government emergency obstetric care facilities (2013). Of the total 389,965 deliveries in government health facilities, 22.8% took place in medical college hospitals, 24.9% in district hospitals, and the largest proportion (43.7%) took place in upazila health complexes;

Table 4.4. Distribution of normal, assisted, cesarean and total deliveries within government and non-government emergency obstetric care facilities (2013)

Type of delivery	Government facility												Non-government facility					
	MCH		DH		UHC		MCWC		Other Govt.		Total		NGO facility		Private facility		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Normal delivery	38711	14.4	60154	22.3	143346	53.2	25280	9.4	1973	0.7	269464	100.0	27084	36.1	47868	63.9	74952	100.0
Assisted delivery	3436	40.5	1471	17.3	2891	34.1	672	7.9	13	0.2	8483	100.0	662	28.2	1689	71.8	2351	100.0
Cesarean section	46801	41.8	35433	31.6	24008	21.4	5689	5.1	87	0.1	112018	100.0	14941	11.3	117164	88.7	132105	100.0
Total deliveries	88948	22.8	97058	24.9	170245	43.7	31641	8.1	2073	0.5	389965	100.0	42687	20.4	166721	79.6	209408	100.0
Total	177896	-	194116	-	340490	-	63282	-	4146	-	779930	-	85374	-	333442	-	418816	-

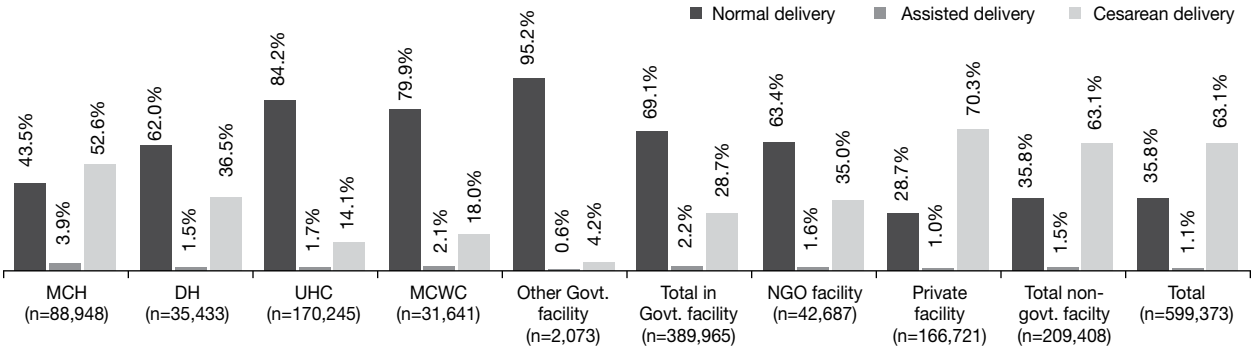


Figure 4.7. Distribution of normal, assisted and cesarean delivery by type of health facility (2013)

8.1% of deliveries took place in maternal and child health centers. Of the total 209,408 deliveries in non-government facilities (NGO, private), 20.4% were done at NGO facilities and 79.6% at private clinics/hospitals. Table 4.4 also reveals that there were 112,018 cesarean sections in public health families and 132,105 in non-government health facilities. Of the total cesarean sections at public facilities, 41.8% were done in medical college hospitals (n=46,801), 31.6% in district hospitals (n=35,433), 21.4% in upazila health complexes (n=24,008), and 5.1% in maternal and child welfare centers (n=5,689). Of the total cesarean sections done in non-government health facilities 11.3% were done at NGO facilities (n=14,941), 88.7% at private clinics/hospitals (n=117,164), and 0.1% at other private health facilities (n=87).

Figure 4.7 shows the distribution of normal, assisted and cesarean deliveries by type of health facility.

An indirect national estimate of cesarean section rate can be made from the available institutional data. Data from the Bangladesh Demographic and Health Survey 2011 show an institutional delivery rate of 28.8%. So, against a total 599,373 (Figure 4.7) reported institutional deliveries as mentioned above, we extrapolated the total number of deliveries both at home and health facility. This number should be [(599,373÷28.8)x100]=2,081,156 total deliveries. Cesarean section always takes place in health facility. This report shows the total cesarean sections of 244,123 (Figure 4.6). Therefore, the estimated national cesarean section rate should be [(244,123÷2,081,156)X100]=11.7%.

Voucher scheme for maternal health

The Ministry of Health and Family Welfare, in collaboration with WHO, introduced in 2007 an innovative maternal health voucher scheme, a demand-side financing (DSF) initiative, to improve access to and use of quality maternal health services. Currently, the program is being implemented in 46 upazilas of 41 districts and 7 upazilas of 4 MNHI (maternal and newborn health initiative) districts. Poor women defined by specific criteria (roughly 50% of the pregnant women) and validated by local government representatives are eligible for the voucher.Half of the target population qualifies as poor. The total number of cumulative beneficiaries reached 870,423 (Figure 4.8). In 2012-2013, a total of 152,401 pregnant women received the benefit. A voucher entitles its holder for specific health services free of charge, viz. antenatal and postnatal care, safe delivery, treatment for complications, including cesarean section, transportation cost, and laboratory tests. If delivery is attended by skilled staff, voucher-holders get unconditional cash benefits for nutritious food and gift-box. Safe delivery rate is now at impressive 85% amongst the voucher recipients. Both public and non-public healthcare providers (NGO and private facilities) participate in the DSF scheme. There is a target to scale the program up to 100 upazilas, with a 20% increase each year. Strikingly, the maternal mortality rate among the voucher-holder women is 12 per 100,000 livebirths, in sharp contrast to the national rate of 170 per 100,000 livebirths.

A voucher entitles its holder for specific health services free of charge, viz. antenatal and postnatal care, safe delivery, treatment for complications, including cesarean section, transportation cost, and laboratory tests ...

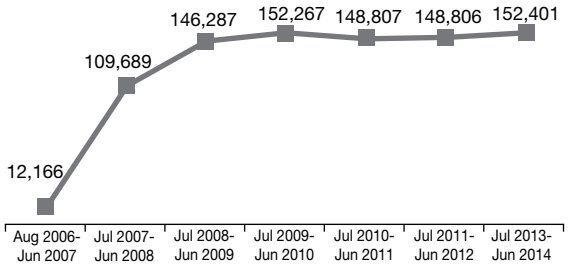


Figure 4.8. Number of DSF (Demand-side Financing) beneficiary pregnant women by year (total 870,423)

Maternal and Newborn Health Initiative (MNHI)

The Maternal and Newborn Health Initiative is being implemented by the Director of Primary Healthcare of DGHS in four districts of Bangladesh, with the assistance of UNFPA, UNICEF, and WHO and funded by EC and DFID. The districts are Thakurgaon, Jamalpur, Narail, and Maulvibazar. All the upazilas under these four districts are included. The program focuses on saving maternal and newborn lives through creating need-based demand and priority-based actions. The broad principle of this program is Local-level Planning

(LLP) and decentralization. The civil surgeon and deputy directors of family planning of the respective districts serve as the local focal points for the program. The project has a number of "novel and innovative" approaches, based on global best practices, to accelerate progress toward achievement of MDG 4 and 5, having elements, such as: (i) a district-focused approach with direct resource allocation to identified cost-centers and the application of WHO's problem-solving techniques to develop, monitor, and implement the plans; (ii) continuum of care that links the mothers and newborns and addresses the three delays model; (iii) rights-based equitable approach in planning, monitoring, implementation, and supervision through involvement of consumer groups and public-health watch groups to ensure accountability to women, families, and communities; (iv) piloting initiatives, such as contracting private practitioners to provide specialized services in an attempt to improve human resources for MNH at the district and upazila levels; (v) pilot-testing of demand-side financing schemes (vouchers and other means), targeting the vulnerable and marginalized households to address equity; and (vi) pilot-testing of ARH community-based and clinic-based 'youth-friendly' services and Voluntary Confidential Counselling and Testing (VCCT) centres in selected districts with high risks of HIV and STIs.

Tetanus Toxoid (TT) for women of childbearing age

Table 4.5 shows the tetanus toxoid coverage among the women of childbearing age in Bangladesh in 2013. The country is maintaining the maternal and neonatal tetanus-free status since 2008. The immunization program of Bangladesh aims to immunize the women of childbearing age by administering tetanus toxoid vaccine (TT) before the age of 18 years. A period of 2 years and 7 months is required to complete all the 5 doses of TT vaccines. If a woman starts TT vaccination at the age of 15 years and maintains the exact interval, she would be able to complete all the doses before she reaches the age of marriage, ensuring protection for her entire reproductive life. The data shown in Table 4.5 have been excerpted from EPI Coverage Evaluation Survey 2013. However, the coverage gradually falls for the subsequent TT doses and is remarkably lower for the fourth and final doses. This aspect needs attention to ensure effective coverage.

Table 4.5. Tetanus toxoid coverage (%) in Bangladesh among women of childbearing age (2013)

Area	TT1	TT2	TT3	TT4	TT5
National	98%	96%	83%	64%	44%
Rural	98%	96%	84%	64%	44%
Urban	99%	97%	84%	63%	43%

Community-based skilled birth attendants and midwives

Shortage of skilled manpower in the remote areas to extend obstetric care is one of the major barriers to improving maternal health. The Ministry of Health and Family Welfare undertook a short-term measure to tackle the problem by producing trained manpower for fulfilling the gap in the interim period. Young medical doctors were given 6 months' training on obstetrics and anesthesiology. The Directorate General of Health Services is also implementing community-based skilled birth attendant (CSBA) training program since 2003, with the goal to train and educate the family welfare assistants/female health assistants and similar health workers in NGOs and private sector, with midwifery skills. The CSBAs are trained to conduct the normal safe deliveries at home and to identify the risks and complicated cases so that they can motivate the women and their family members to refer to the nearby health facilities where comprehensive EOC services are available. The CSBA training program is now organized in 342 upazilas of 60 districts. The Government introduced midwifery course and created posts for 3,000 midwives.

Obstetric fistula program

In Bangladesh, obstetric fistula and other maternal morbidities affect thousands of women. It is estimated that approximately 71,000 women are currently living with fistula in the country (1.69 per 1,000 ever-married women). The UNFPA has been assisting the Government of Bangladesh in strengthening quality service delivery and capacity development of service providers at 10 medical college hospitals and 4 private hospitals. Since 2003, 24 doctors and 253 nurses have been trained; 3,050 complicated obstetric fistula surgeries were performed. National Fistula Center has been established in Dhaka Medical College Hospital.

Cervical and breast cancer screening program

The cervical and breast cancers are significant disease burdens in Bangladesh. The United Nations Population Fund has been assisting the Ministry of Health and Family Welfare to run cervical and breast cancer screening program. The program

is being coordinated from the Department of Obstetrics and Gynecology at the Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. Beginning from 2004, about 320 centers have been established throughout the country to conduct the cervical and breast cancer screening program. A list of the centers has been provided in the annex; 1,228 service providers from 64 districts were trained within 2013 on cervical and breast cancer screening, based on visual inspection with acetic acid (VIA) and clinical breast examination (CBE). Figure 4.9 shows that a total 691,423 VIA screening tests were done in 9 years (from 2005 to 2013) throughout the country, using the screening centers and, on average, 5.0% of them were found positive. The screening tests coverage is increasing every year. In 2013, 152,085 VIA screening tests were done, with 5.5% showing VIA+ve. All VIA+ve cases were referred to colposcopy clinic at BSMMU and different medical college hospitals. It is reported that the colposcopy clinics at BSMMU and various medical college hospitals were attended by 7,135 referred VIA+ve women in 2013. Analysis of data on 12,240 VIA+ve women for whom colposcopy was done between 2005 and 2013 at BSMMU shows that 6.6% (n=803) women had cervical cancer, 9.2% (n=1,131) had CIN II and III, 35.3% (n=4,308) had CIN I, and 46.3% (n=5,671) had no problem (appeared healthy) in their cervix. A list of the colposcopy clinics with number of colposcopies done in 2013 is provided in the annex.

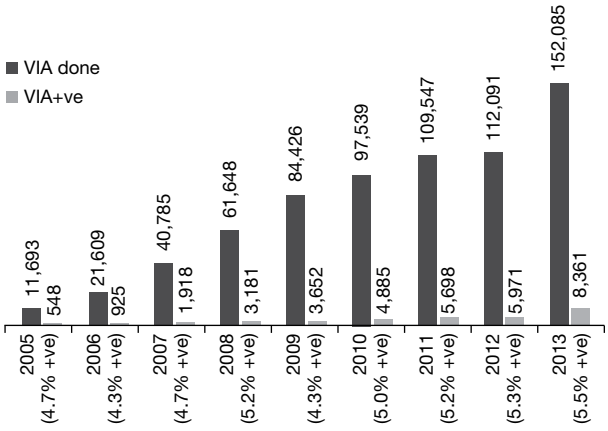


Figure 4.9. Number of VIA tests done and their results (2005 to 2013) (total 691,423 tests done in 9 years; 5.0% found positive)

Figure 4.10 shows that a total of 613,477 screenings for CBE were done in 7 years (from 2007 to 2013) throughout the country, using the screening centers and, on average, 1.5% of them were found positive. The number of screening tests coverage is increasing every year. In 2013, a total

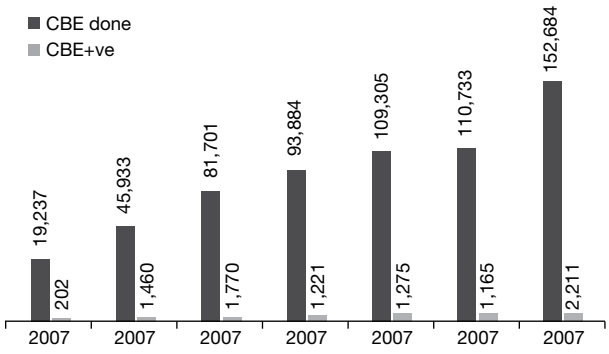


Figure 4.10. Number of CBE tests done and their results (2007 to 2013) (total 613,477 tests done; 1.5% found positive)

of 152,684 screening tests were done, with 1.4% showing positive.

Child healthcare

This report on child healthcare in Bangladesh covers information on universal routine child immunization, integrated management of childhood illness (IMCI), scaling up of newborn health interventions, and special-care newborn unit (SCANU), school health and adolescent health programs.

Universal routine child immunization

This chapter excerpts data from the manuscript of EPI Coverage Evaluation Survey 2013 (EPI-CES 2013) Report as the book was awaiting publication. The percentage of children aged ≤12 months covered with all vaccinations was 81.0% in 2013 (Figure 4.11). The EPI CES 2013 validated the immunization coverage both by EPI cards and history. Figure 4.11 also shows the trend of immunization coverage from 2011 to 2013 among the same age-group of children.

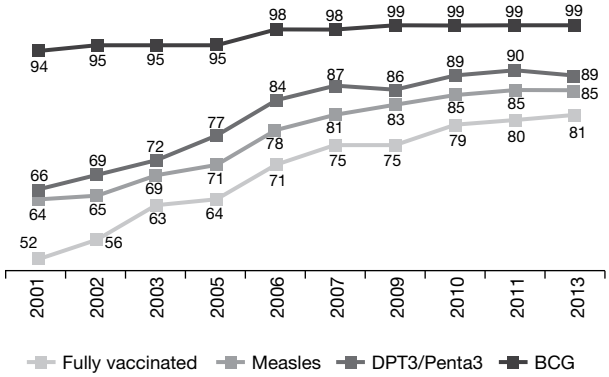


Figure 4.11. Trend of child (≤12 months) immunization coverage (%) (card plus history)

Figure 4.12 shows the trend of immunization coverage from 2005 to 2013 among ≤12 and ≤23 months old children.

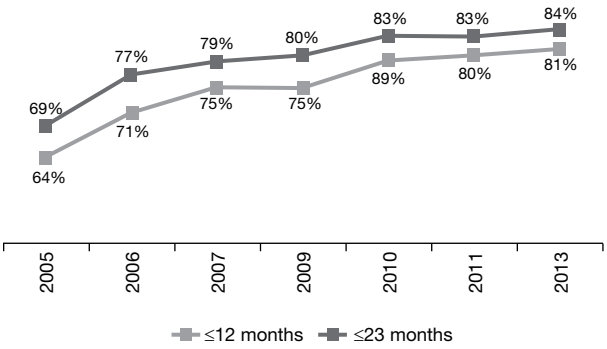


Figure 4.12. Trend of valid vaccination coverage among children aged ≤12 months and ≤23 months (Ref. EPI-CES 2013)

Table 4.6 shows the valid vaccination coverage of ≤12 and ≤23 months old children as found in EPI-CES 2013. Measles vaccine coverage is 86% and 89% among ≤12 and ≤23 months old children respectively. Full vaccination coverage among these two groups of children is 81% and 84% respectively.

Bangladesh showcases a success story on polio eradication. The country is polio-free from 2001, with 18 exceptional cases of wild polio imported from neighboring India in 2006. National Immunization Day is observed every year. The current valid national OPV3 coverage rate is 92%, with each district having coverage of more than 80%. The polio eradication program in Bangladesh illustrates Government's commitment through providing 100% cost of routine polio immunization and 95% cost of supplementary polio immunization activities. Bangladesh, despite being free from polio for a long time, could not achieve polio-free certification as two countries of the WHO South-East Asia Region, viz. India and Nepal, could not eliminate the last traces of polio. However, for the 36 months, no new polio case was reported from these two countries. Based on this progress, the WHO completed necessary scientific observations and the South-Asia Region, including Bangladesh, and we obtained the polio-free certification in February 2014. As per the WHO recommendation, Bangladesh is trying to introduce inactivated poliovirus vaccine (IPV) by withdrawing the type 2 component of oral poliovirus vaccine. Bangladesh is also satisfactorily progressing toward achieving the measles elimination goal of the WHO's South-East Asia Region by 2020. National measles control activities have been accelerated since 2004 and already implemented all recommended strategies for measles elimination and rubella/congenital rubella syndrome control. Valid measles vaccination coverage among ≤12 months old children is 86% according to EPI-CES 2013. Coverage of the first dose (MCV1) of measles vaccine was estimated to increase from 81% in 2004 to 96% in 2012. In 2012; the second dose of measles vaccine and sentinel surveillance for congenital rubella syndrome, covering all districts, were introduced in the national immunization program.

WHO completed necessary scientific observations on the polio situation in South-Asia Region, including Bangladesh, and we obtained the polio-free certification in February 2014 ...

Table 4.6. Valid vaccination coverage of ≤23 and ≤12 months old children as found in EPI-CES 2013

Age-group	BCG	OPV1	OPV2	OPV3	Penta1	Penta2	Penta3	Measles	Full vaccination
≤12 months	95%	95%	94%	92%	91%	93%	92%	86%	81%
≤23 months	95%	95%	94%	92%	91%	93%	92%	86%	81%

Table 4.7. Valid full vaccination coverage differentials by sex, area of residence, and division as found in EPI-CES 2013

Age-group	Sex		Residence		Division						
	Boy	Girl	Rural	Urban	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
≤12 months	81%	80%	81%	80%	78%	79%	79%	85%	85%	81%	81%
≤23 months	84%	83%	84%	84%	80%	82%	83%	87%	87%	85%	83%

Table 4.7 shows the valid full vaccination coverage differentials by sex, area of residence, and division as found in EPI-CES 2013 among ≤12 and ≤23 months old children.

In the measles campaign (follow-up), high-potency vitamin A and antihelminthes distribution are also included. Table 4.8 shows the Penta vaccine, vitamin capsule and antihelminthic coverage among the under-five children.

Integrated management of childhood illness (IMCI)

The relevant section of DGHS, with assistance from UNICEF, WHO, and other partners, is implementing IMCI program since 1998. Both facility and community IMCI have been scaled up—facility IMCI to 425 upazilas initially in all districts with high child mortality, and community IMCI to 150 upazilas mainly in the low-performing districts. Given the neonatal mortality showing slow declining rate, neonatal health has been incorporated in both facility and community IMCI programs. The care-seeking from trained providers for pneumonia and diarrhea has increased remarkably over the last few years. Antibiotic treatment for pneumonia, ORT-use for diarrhea, and exclusive breastfeeding have been increased to 71%, 80%, and 64% respectively (BDHS 2011). More than 4,000 doctors, 17,000 paramedics, 8,500 basic health workers, and 15,600 skilled birth attendant have been given training on different aspects of IMCI (3,500 doctors, 9,500 paramedics on IMCI clinical management; 500 doctors and 7,500 paramedics on sick newborn care; 8,500 basic health workers on community case management; and 15,600 skilled birth attendants on helping babies breathe). Save The Children and UNICEF are supporting MOHFW for the national scale-up of Helping Baby Breathe program for the prevention and management of newborn deaths due to birth asphyxia. As of April 2013, 40 districts and 2 city corporations have been covered. Logistics, like penguin sucker, bag and mask, have been distributed. Large-scale maternal, neonatal and child health (MNCH) program, along with newborn health interventions, are being carried out in 31 out of 64 districts. This program is supported by UNICEF, UNFPA, JICA, USAID, Save The Children, BRAC, UNDP, PLAN, and other partners. Moreover, the MOHFW has established special-care newborn unit (SCANU) in 20 hospitals (medical college and district hospitals) with support from UNICEF; additional 10 will be established in 2014-2015 with support from UNICEF; all district and upazila hospitals of 10 more districts will be added by 2016 through assistance from SAARC Development Fund.

Before inception of IMCI program in Bangladesh, there were separate vertical child health programs, viz. Control of Diarrheal Diseases (CDD) and Acute Respiratory Infections (ARI). IMCI addresses morbidities which are responsible for almost 75% of under-five deaths. To simplify case management in the primary healthcare settings, diseases and problems covered by IMCI program in Bangladesh have been classified into 13 broad categories, viz. (i) very severe disease, (ii) pneumonia, (iii) cough and cold-not pneumonia, (iv) diarrhea, (v) fever-malaria, (vi) fever-no malaria, (vii) fever-malaria unlikely,

Table 4.8. Coverage of Penta vaccine, vitamin A capsule, and anti-helminthes among under-five children (EPI CES 2013)

Residence	Penta vaccine (coverage) (0-59 months)	Vitamin A capsule			Antihelminthes (24-59 months)		
		Infant (6-11 months)	Children (12-59 months)	Postpartum woman	Boy	Girl	Total
National	96%	84%	93%	36%	88%	90%	90%
Rural	97%	83%	92%	35%	90%	90%	90%
Urban	96%	87%	94%	37%	95%	89%	90%

(viii) measles, (ix) ear problem, (x) drowning, (xi) child injury, (xii) pus draining from umbilicas, and (xiii) other diseases. The Management Information System (MIS) of DGHS, with support from UNICEF, collects data on IMCI services being provided. For 2013, data on 5,041,684 children aged 0 to 5 year(s) who received treatment from the IMCI facilities of the 64 districts have been received. Figure 4.13 shows distribution of the children by division.

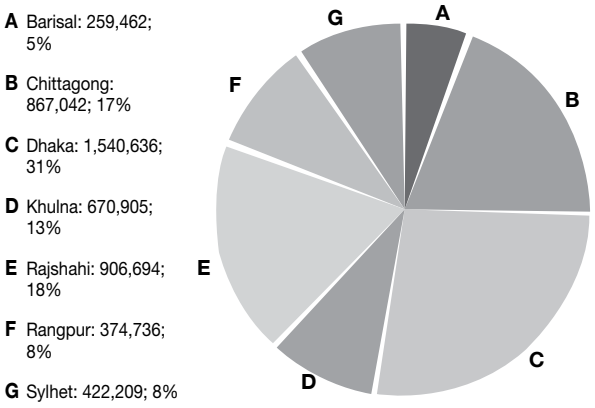


Figure 4.13. Division-wise distribution of children aged 0 to 5 year(s), who received treatment from IMCI facilities in 2013 (total 5,041,684)

Figure 4.14 shows the age distribution of the children. It is seen that children aged 1 to 5 year(s) constituted the largest IMCI service recipients (58%), followed by 2 to 12 months age-group (34%). Of the total under-five children, 3% were at the neonatal age. Age-group 29 to 59 days comprised 5%.

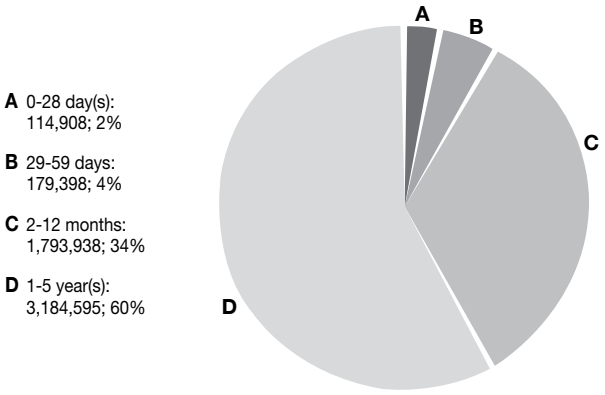


Figure 4.14. Distribution by age-group of the children (0-5 years) cases who received treatment from the IMCI facilities in 2013 (total 5,295,789)

Further disaggregation of the children who received treatment from the IMCI facilities in 2013 is shown in the annex.

School health program

In Bangladesh, school health program began in 1951 in Dhaka and Chittagong and gradually expanded by 1972 to a network of 23 school health clinics located mainly in one school campus of the then district headquarters. Currently, two medical officers are assigned to each of the clinics. The school health clinics provide clinical services to pupils of the schools. In addition, the clinics help in improvement of the school environment, improvement of school health and nutrition services, and health education to the pupils. The HPNSDP 2011-2016 has broadened the scope of school health program to expand allover the country, to provide preventive and promotive health services through health education; screening for eye, ENT, nutrition and dental health; first-aid, and referral. School health program includes training of school teachers for teaching on first-aid to the school students, personal hygiene, handwashing, nutrition, safe water and sanitation, and provision of first-aid box.

Adolescent health program

The adolescents (10-19 years) constitute about 23% of the population in Bangladesh. The annual growth rate of the adolescent population is 4.3% compared to 1.37% general population growth rate. Early marriage and motherhood are common in Bangladesh. About 50% of all 15-19 years old females are married, of whom about 33% are already mothers, and another 6% are pregnant having risks to their health. Their knowledge on unprotected sex is also limited that may expose them to STDs, unwanted pregnancies, and abortions. In consideration of the above facts, the adolescent health program has been incorporated into school health program under HPNSDP running 2011-2016. The objectives of the program include; (i) improvement of knowledge of adolescents on adolescent reproductive health issues; (ii) creation of positive changes in the behavior and attitude of the gate-keepers of the adolescents toward reproductive health; (iii) providing easy access of all adolescents to adolescent-friendly and related health and other services. The adolescent health program provided training of trainers in 2011-2012 to 121 officers of both health and education departments to train the field-level health workers, teachers, and students, provided training to 1,118 health personnel and 1,889 secondary and higher secondary teachers of Kushtia, Rangpur, and Mymensingh district to develop their skills for fostering the objectives of adolescent health program. Training was also given to secondary school students (n=1,560) for creating peer-group learning.

CHAPTER 5

SECONDARY AND TERTIARY HEALTHCARE

Medical college hospitals in different divisions have differing population-bed ratios

Those facilities that provide more advanced or specialty care than the primary healthcare facilities at the ward, union and upazila levels are treated as secondary and tertiary-care health facilities. However, many of the upazila health complexes (UHCs) have clinical specialists who provide specialty care to the patients. The district hospitals are usually termed secondary hospitals as these have fewer facilities for specialty care compared to many in the medical college hospitals. There are also different types of specialty-care centers, such as infectious disease hospitals, tuberculosis hospitals, leprosy hospitals, which fall under the health facilities of secondary care. The medical college hospitals are located at the regional level, one for few districts and are affiliated with medical colleges and provide specialty care in many disciplines. These hospitals are called tertiary hospitals. Tertiary hospitals also include the super-specialty hospitals at the national level or centers that provide high-end medical services in a specific field.

The district hospitals are usually termed secondary hospitals as these have fewer facilities for specialty care compared to many in the medical college hospitals ...

A recap of primary healthcare

An overview of primary-care hospitals and health centers located at the upazila level and below is given in Chapter 4. To summarize, there are 483 hospitals, with a total of 19,855 beds, and 14,201 health facilities for outpatients only, yielding a total of 14,684 health facilities in rural setting for primary healthcare. Chapter 4 also mentions that primary healthcare in the urban setting is principally the responsibility of the Ministry of Local Government, Rural Development and Cooperatives (MOLGRD) and is delivered through the city corporations and municipalities which run a number of small to medium-sized hospitals and outdoor facilities. Additionally two large-scale donor-financed primary healthcare projects, viz. Urban Primary Health Care Project (UPHCP) and Smiling Sun Franchise Program run by NGOs under stewardship of the city corporations provide urban primary healthcare. The MOHFW owns 35 urban dispensaries and 23 school health clinics in some of the bigger cities and municipalities.

Secondary and tertiary hospitals

Table 5.1 summarizes the number and bed-capacity in different types of secondary and tertiary hospitals/ health centers under DGHS. Further details, including the list and bed-capacity of each type of hospitals, are provided in the annexure.

Table 5.1. Secondary, tertiary and other hospitals/health centers under DGHS at the district level and above (as of December 2014)

Type of Hospital	Number	Bed
Speciality post graduate hospital	11	3034
Medical college hospital	14	12763
Dental college hospital	1	200
Hospital of alternative medicine	2	200
Specialized hospital	3	450
Special purpose hospital	1	500

Table 5.1. continued

Type of Hospital	Number	Bed
General hopsital (not district hospital)	11	2500
200-250 bed hospital (not district hospital)	16	4000
50-bed hospital	3	150
District hospital	36	3900
Infectious disease hospital	5	180
Chest hospital	14	816
Leprosy hospital	3	130
Specialized health center	3	0
Other hospital	3	155
Total	**126**	**28978**

Bangabandhu Sheikh Mujib Medical University (BSMMU)

The Ministry of Health and Family Welfare provides financial assistance to BSMMU as well as to its affiliated hospital. The BSMMU is the only Medical University in Bangladesh. Both university and its affiliated hospital are autonomous. The hospital has 1,500 beds which includes 752 free beds. The hospital has 48 clinical departments, 167 cabins, and 18 operation theaters.

Distribution of public hospitals and hospital beds by division

Figure 5.1 shows the distribution of the secondary and tertiary hospitals by administrative division. Dhaka division has the highest number (38%) of secondary and tertiary hospitals, followed by Chittagong and Khulna divisions with 16% and 13% respectively. Barisal division has the lowest number (6%) of such hospitals.

Table 5.2 shows that, of the total 14 medical college hospitals, 5 are in Dhaka division (35.71%), 2 each in Chittagong, Rajshahi and Rangpur division (14.29% each), and one in each of Barisal, Khulna and Sylhet division (7.14% each). Among other secondary and tertiary hospitals (total 112), the highest number of facilities are situated in Dhaka Division (38.39%) followed by Chittagong (16.07%) and Khulna (13.39%) divisions. Sylhet division has the lowest number (6.25%) of such facilities.

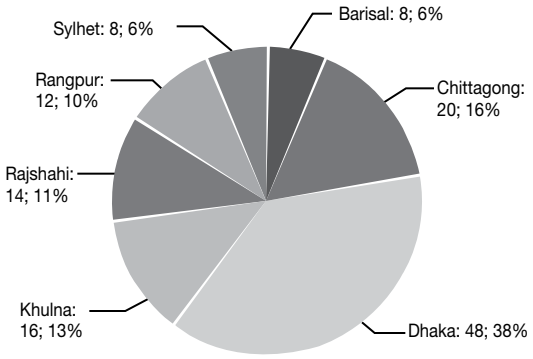


Figure 5.1. Distribution (number and percentage) of government-owned secondary and tertiary hospitals by administrative division of Bangladesh, December 2014 (total 126)

Available number of beds for the population in the catchment areas is one of the good proxies for measuring the strength of healthcare infrastructure.

Figure 5.2 shows the distribution of government-owned secondary and tertiary-care hospital beds by administrative division of Bangladesh. It is not surprising to see that about 45% of beds in all secondary and tertiary hospitals including the government medical college hospitals are concentrated in Dhaka division.

Table 5.2 Distribution of secondary, tertiary and other hospitals/health centers under DGHS at the district level and above (December 2014)

Type of hospital	No. and %	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	Total
Medical College hospitals	No.	1	2	5	1	2	2	1	14
	%	7.14	14.29	35.71	7.14	14.29	14.29	7.14	100.00
Others hospitals at the district level and above	No.	7	18	43	15	12	10	7	112
	%	6.25	16.07	38.39	13.39	10.71	8.93	6.25	100.00

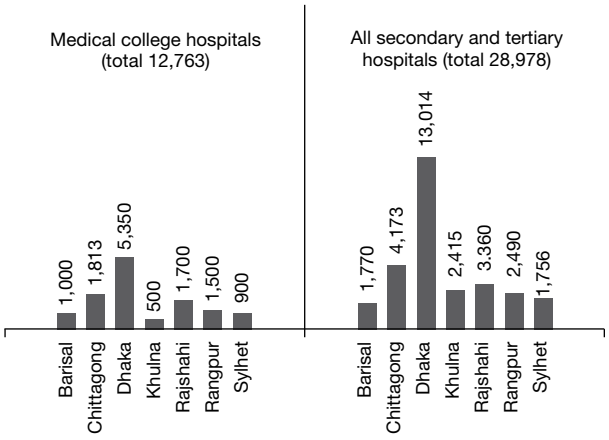


Figure 5.2. Distribution of the number of secondary and tertiary hospital beds by administrative division of Bangladesh (December 2014)

Figure 5.3 shows the population-bed ratio for the secondary and tertiary-care hospitals by administrative division of Bangladesh. The Khulna division has the paucity of beds in its medical college hospital (only one bed per 33,525 people) compared to other divisions. In Chittagong and Rajshahi divisions also, there is paucity beds in medical college hospital compared to the national average of one bed per 12,061 people. With the addition of beds from the new medical college hospitals, the population-bed ratios are expected to be reduced in the near future.

Private hospitals, clinics, and diagnostic centers

As of 2013, DGHS provided registration to 8,203 private hospitals, clinics, and diagnostic centers

Increasing beds in medical college hospitals will contribute to less requirement of people of these regions to travel to other regions ...

in Bangladesh. The number of registered private hospitals and clinics is 2,983 and that of registered private diagnostic centers is 5,220. The total number of beds in these registered private hospitals and clinics is 45,485. The annex to the chapter shows the number of sanctioned beds, free beds, departments, wards, cabins, and operation theaters in some of the private and non-profit hospitals.

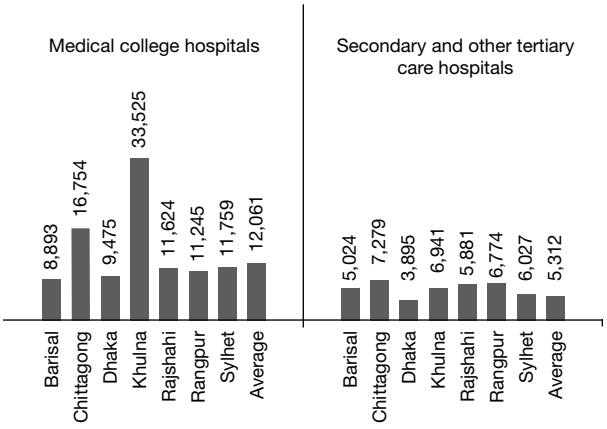


Figure 5.3. Population per bed in government secondary and tertiary hospitals by administrative division of Bangladesh (December 2014)

CHAPTER 6

UTILIZATION OF HEALTH FACILITIES

Increased number of private and NGO facilities sending data to MIS-Health

Huge numbers of private and NGO-run health facilities are increasingly participating in sending patient-related data to the MIS-DGHS, along with the public hospitals and health centers.

Public hospitals

For 2012 (January to December), we received data from quite a good number of public hospitals and health centers (Table 6.1). From these health facilities, reportedly 149,268,429 patients received healthcare from their outpatient departments. The number of children (both sexes) was 24,684,250. The number of male adults was 46,377,673, and the number of female adults was 78,042,995. The number of reported admissions was 4,512,737, of which 1,694,006 were for males, 2,033,638 for females and 785,093 were for children. The number of hospital deaths was 79,969, of which 36,684 were among males, and 25,255 among females; the number of deaths of children (both sexes) was 18,030. The average hospital death rate was 1.8%.

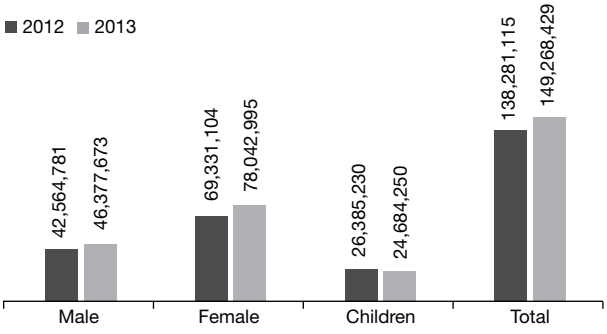


Figure 6.1. Number of reported outdoor visits in all DGHS health facilities (2012 and 2013)

Detailed information on each hospital/health facility is given in the annex.

Figure 6.1 compares the outdoor visits in all health facilities under DGHS in 2012 and 2013. The number of reported total outdoor visits increased by 7.9% in 2013 compared to that in 2012. Visits by male and female pateints to the outdoor increased by 9.0% and 12.6% respectively while that for child patients decreased by 6.4%.

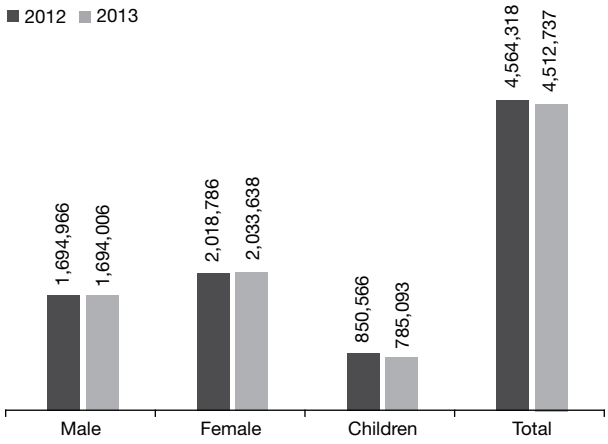


Figure 6.2. Number of reported adminissions in all DGHS hospitals in 2012 and 2013

Figure 6.2 compares the number of admissions in all hospitals under DGHS in 2012 and 2013. The number of reported total admissions decreased by 1.1% in 2013 compared to that in 2012. Admission of male and child pateints decreased by 0.1%, 7.7% respectively while that of female patients increased by 0.7% .

Table 6.1. Number of reported admissions, deaths, and outpatient visits in public health facilities (2013)

Type of service-use and death	Male	Female	Children	Total
Outdoor visit	46377673	78042995	24684250	149268429
Admission	1694006	2033638	785093	4512737
Hospital death	36684	25255	18030	79969

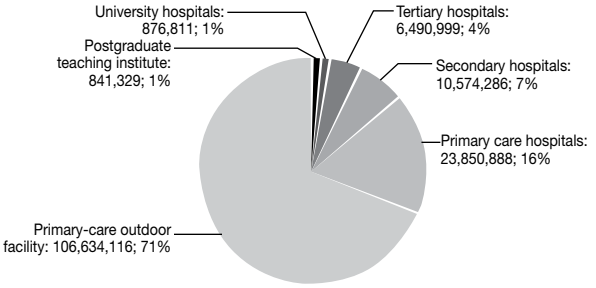


Figure 6.3. Distribution of outdoor patients by type of health facility in 2013 (total patients 149,268,429)

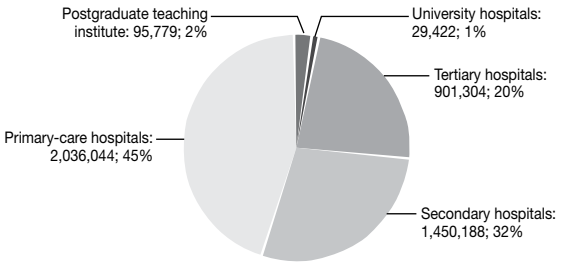


Figure 6.4. Distribution of admissions by type of hospital in 2013 (total admissions 4,512,737)

Figure 6.3 shows distribution of the OPD patients by type of health facilities. Of the total reported 149,268,429 outdoor patients, 71% were seen in the primary-care outdoor-only health facilities (trauma center, union subcenter, health and family welfare center, community clinic);16% patients were seen in the primary-care hospitals (upazila health complex and rural health center). In the secondary-care hospitals (district or general hospital), 7% patients were seen. The tertiary-care hospitals (medical college hospital, dental hospital, and mental hospital), and the postgraduate teaching hospitals served 4% and1% of the outdoor patients respectively. The Bangabandhu Sheikh Mujib Medical University Hospital served 1% of the total reported outdoor patients.

Figure 6.4 shows distribution of admissions in 2013 by type of hospital. Of the total 4,512,737 reported admissions, 45% were in the primary-care hospitals (upazila hospitals) and 32% in the secondary-care hospitals (district and general hospitals); the tertiary-care hospitals (medical and dental college hospitals, mental hospital) and the postgraduate teaching hospitals had 20% and 2% of admissions respectively. Bangabandhu Sheikh Mujib Medical University Hospital had 1% of the total admissions.

Table 6.2 shows the average length of stay, bed-occupancy rate, hospital death rate, average daily admission, and average daily outdoor patient visit in different types of public hospitals. Detailed information is given in the annex.

Figure 6.5 shows the distribution of 422 upazila health complexes by bed-occupancy rate in 2013. It revealed that bed-occupancy rate of 47.4% at upazila health complexes was more than 80%; at 28.9% of upazila health complexes, it was between >60 to 80%; and at 28.7% of upazila health complexes, it was ≤60%.

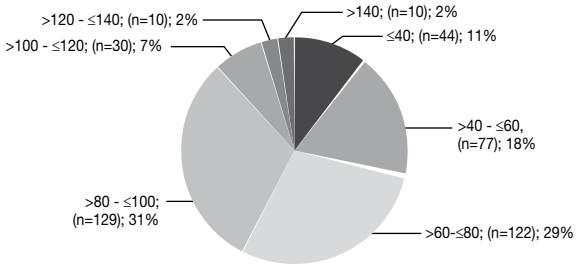


Figure 6.5. Distribution of 422 upazila hospitals by bed-occupancy rate (%) in 2013

Table 6.2. Average length of stay, bed-occupancy rate, hospital death rate, average daily admission, and average daily outdoor patient visits in different types of public hospitals (2013)

Type of health facility	Average length of stay (day)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily admissions (N)	Average daily outdoor visits (N)
University hospital	12.0	98.0	4.8	81.0	2402.0
Specialized postgraduate teaching institute	8.6	96.2	4.7	37.5	230.5
Medical college hospital	5.3	113.9	4.9	99.0	711.3
District hospital	2.7	117.3	1.6	64.0	467.0

Table 6.3. Distribution (%) of the upazila hospitals by bed-occupancy rate inthe last 6 years (2008 to 2013)

Bed-occupancy rate (%)	2008		2009		2010		2011		2012		2013	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
≤40	10	2.5	8	2.0	40	9.7	24	5.9	15	3.7	44	10.4
>40–50	42	10.4	23	5.6	23	5.6	19	4.7	23	5.7	24	5.7
>50–60	59	14.6	36	8.8	52	12.6	42	10.4	46	11.3	53	12.6
>60–70	74	18.3	75	18.4	48	11.6	50	12.4	53	13.1	60	14.2
>70–80	76	18.8	113	27.7	73	17.7	63	15.6	77	19.0	62	14.7
>80–90	61	15.1	60	14.7	56	13.6	64	15.8	61	15.0	80	19.0
>90–100	48	11.9	48	11.8	35	8.5	47	11.6	61	15.0	49	11.6
>100–110	16	4.0	20	4.9	30	7.3	36	8.9	36	8.9	25	5.9
>110–120	16	4.0	12	2.9	25	6.1	27	6.7	11	2.7	5	1.2
>120–130	0	-	9	2.2	14	3.4	17	4.2	9	2.2	5	1.2
>130–140	0	-	4	1.0	6	1.5	7	1.7	4	1.0	5	1.2
>140	2	0.5	0	-	11	2.7	8	2.0	10	2.5	10	2.4
Total	404	100.0	408	100.0	413	100.0	404	100.0	406	100.0	422	100.0

Table 6.3 shows the distribution (%) of the upazila hospitals by bed-occupancy rate in the last 6 years (2008 to 2013).

Private hospitals

The private hospitals are increasingly providing data on hospital utilization. The annex provides a list of private hospitals, with the number of admissions, hospital deaths, outdoor visits, bed-occupancy rates, hospital death rates, average daily admissions, and average daily outdoor visits in 2013.

USAID-supported NGO Health Service Delivery Project

The NGO Health Service Delivery Project (NHSDP) is a follow-up project to the Smiling Sun Franchise Program (SSFP), started in January 2013 as one of the USAID's largest investments in the health sector of Bangladesh. NHSDP supports the delivery of an essential service package (ESP) of primary healthcare through a nationwide network of 26 local NGOs, 334 static clinics, 9,018 satellite clinics, and 6,666 community service providers. USAID's NHSDP serves approximately 23 million people of Bangladesh (15% of the total population) who have had 37 million service encounters from the *Surjer Hashi* (SH) clinics. The project complements GOB efforts to maximize the outreach to the poor and underserved population in the country, with quality services at an affordable fee or no cost. There are four dimensions of performance by NGOs under NHSDP, viz. coverage and uptake, quality, equity, and institution strengthening through three elements, such as improved reproductive and MNCH outcomes, sustainability, and delivery of quality ESP to the poor.

Table 6.4 shows the number of patients served by the USAID's NGO Health Service Delivery Project partners in 2013. A total of 113,909 newborn contacts for essential newborn care, 3,633,968 immunization service, treatment to 2,748,338 ARI cases, ANC and PNC service to 1,236,314, and 417,717 maternal encounters were reported. The total maternal health and family planning service contact was 3,726,755 and 14,814,539 respectively. Out of the total service encounters, 9,398,134 were for the poor.

The SH clinics provided treatment to 26,122,316 patients (Table 6.5). The number of admissions was 21,076 in 54 ultra-clinics for childbirth. There was no death as in the previous year. In 54 ultra-clinics, bed-occupancy rate was 64%, and daily admission rate was 63. Both in facilities and at home, a total of 24,487 child deliveries were conducted by the SBAs.

Table 6.4. Number of patients served under USAID's NHSDP (former SSFP) partners in 2013 shown by type of service

Month	Newborn contact	EPI	ARI	ANC	PNC	Maternal contact	FP	Poor customer
January	8516	281848	225893	93936	33584	286443	1208579	694060
February	7875	273020	218323	90810	30797	275210	1183337	697350
March	8797	270856	218782	95609	31549	284272	1206770	726204
April	8225	274790	219414	101507	32194	297255	1215093	752162
May	8096	275917	223130	101901	33517	307411	1222473	769297
June	8611	299549	229202	108463	34478	318977	1226643	788434
July	8821	315405	230004	110639	34988	322739	1253965	808546
August	9270	292863	224432	101293	33641	305385	1213451	778516
September	10426	328997	235432	111388	37103	336835	1261810	830015
October	10618	320300	233503	102192	35658	316521	1248923	813762
November	11671	350332	242052	108496	39224	337652	1285586	864071
December	12983	350091	248171	110080	40984	338055	1287909	875717
Total	113909	3633968	2748338	1236314	417717	3726755	14814539	9398134

Table 6.5. Some parameters of hospitalized patients served by USAID's NHSDP (former SSFP) partners in 2013

Month	Total patients (N)	Admission (N)	Death (N)	Average length of stay (day)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily admission (N)	Total skilled delivery (N)
January	2121371	1675	0	3	63	0	61	1990
February	2074622	1431	0	3	62	0	61	1718
March	2113148	1509	0	3	63	0	62	1800
April	2143947	1478	0	3	62	0	62	1768
May	2139789	1581	0	3	63	0	62	1897
June	2177555	1536	0	3	63	0	63	1849
July	2212880	1753	0	3	64	0	63	2048
August	2127589	1870	0	3	64	0	64	2199
September	2249042	2045	0	3	65	0	65	2394
October	2196493	2047	0	3	65	0	64	2365
November	2284757	2096	0	3	65	0	65	2411
December	2281123	2055	0	3	65	0	65	2408
Total	26122316	21076	0	3	64	0	63	24847

CHAPTER 7

MORBIDITY PROFILE

Morbidity due to non-communicable diseases continuing to increase

The morbidity profile for 2013 has been estimated on admitted patients in the upazila health complexes, district hospitals, and medical college hospitals of Bangladesh as is usually done. For 2013, beginning from January and ending in December, the MIS-Health received data on morbidity profile of indoor patients from 414 upazila health complexes, 57 district and general hospitals, 14 of 21 medical college hospitals, and 6 postgraduate institute hospitals. The number of institutions from which data were collected is shown in Table 7.1.

From the overall morbidity picture, it is evident that the contribution of non-communicable diseases or conditions causing hospital admission is steadily increasing over the past few years. Although diarrhea, the most prominent infectious disease in the country, remains in the top position as cause of admission in most hospitals, most other positions of the top 15 causes of admissions are occupied by non-communicable diseases and conditions like road traffic accident, assault, anxiety and depressive disorders, asthma, peptic ulcer diseases, hypertension, myocardial infarction ('heart attack'), etc.

Limitation

The precision of diagnosis may not be equally sound among various types of hospitals. In the upazila and district-level hospitals, diagnoses mainly depend upon clinical judgment with little help from laboratory investigations. On the other hand, teaching hospitals, like medical college hospitals and postgraduate institute hospitals, have more qualified consultants, availability of wider range of laboratory investigations, and patients remain relatively longer in this type of hospitals. Therefore, precision of diagnosis is better in these hospitals.

In our country, patients usually make their own choices in selecting hospital for services. Therefore, proportions of different types of morbidities vary between types of hospitals. Moreover, as explained above, the precision of diagnosis also varies between levels of hospitals, lower-level hospitals having lower precision. Considering these facts, summaries have been made separately for upazila hospitals, district-level hospitals, and medical college hospitals. As the postgraduate institute hospitals are specialized in nature and each hospital treats specific disease of only one specialized discipline, summary for each specialized hospital has been presented individually.

Like in the previous year, we included year-wise comparison of the percentages of top-seated diseases in different types of institutions. This will show the trends of disease patterns over the last two years. This year we are including sex-wise distribution of the top 15 diseases for each group and also adding a separate section for discussing sex-wise variations of disease pattern.

Table 7.1. Type and number of government hospitals from which indoor morbidity data for 2013 were received

Type of hospital	Total number of hospitals	No. and % of hospitals which provided indoor morbidity data	
		Number	Percentage
Upazila health complex	424	414	97.64
District, general and other 200-250 bed hospital	63	57	90.48
Medical college hospital	14	14	100
Speciality postgraduate hospital	11	5	45.45

Morbidity profile of patients in upazila health complexes

Figure 7.1 shows the morbidity profile in terms of the top 15 diseases/causes of hospitalization among patients admitted in the upazila health complexes. Total number of patients included in the analysis was 1,656,689. The 'top 15' have been selected based on the percentage of prevalence in both sexes.

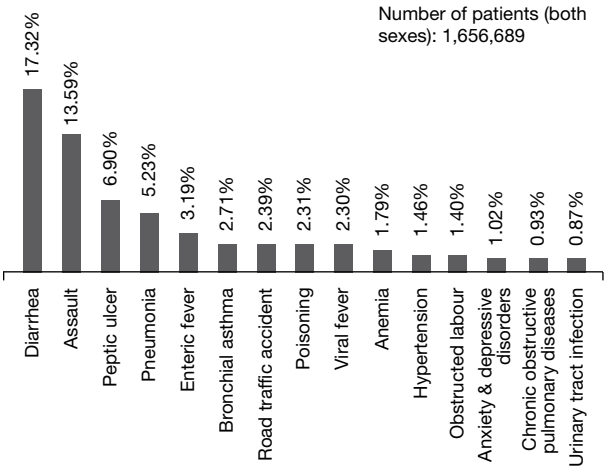


Figure 7.1. Top 15 diseases/causes of admission among the indoor patients of upazila health complexes (n=414) in 2013

Diarrhea (17.32%) was the commonest cause for which the patients were admitted, followed by assault (13.59%). The other three most common diseases were peptic ulcer diseases (6.90%), pneumonia (5.23%), and enteric fever (3.19%). It should be noted that "obstructed labour" appeared in the list of top 15 causes of admission in both sexes, but as this condition is applicable only to female patients the actual prevalence is much higher (see Table 7.2).

Among the total patients 894,425 were female (about 54%) and 762,264 were male (about 46%). Table 7.2 shows the sex-wise distribution of diseases or causes of admission in the upazila health complexes.

The comparison of percentages and ranking of the top 10 diseases or causes of admissions in both sexes with those of the previous year are given in Table 7.3. In 2013, percentages of assault, peptic ulcer, bronchial asthma, poisoning, viral fever and anemia as causes of admissions in the upazila health complexes increased compared to the year 2012. On the other hand, percentages of diarrhea, pneumonia, enteric fever, and road traffic accident decreased in 2013. However, there was no major shift in the ranking within the top 10 causes of admissions.

Table 7.2. Sex-wise prevalence of top 15 diseases/causes of admission among the indoor patients of upazila hospitals (n=414) in 2013

Rank	Male (n=762,264)			Female (n=894,425)		
	Disease/condition	Total patients	Percentage	Disease/condition	Total patients	Percentage
1	Diarrhea	144742	18.99	Diarrhea	142157	15.89
2	Assault	125895	16.52	Assault	99196	11.09
3	Peptic ulcer	52392	6.87	Peptic ulcer	61862	6.92
4	Pneumonia	52105	6.84	Pneumonia	34567	3.86
5	Enteric fever	26753	3.51	Enteric fever	26108	2.92
6	Road traffic accident	26455	3.47	Obstructed labour	22897	2.56
7	Bronchial asthma	23446	3.08	Bronchial asthma	21499	2.40
8	Viral fever	19188	2.52	Anemia	20848	2.33
9	Poisoning	18697	2.45	Poisoning	19640	2.20

Table 7.2. continued

Rank	Male			Female		
	Disease/condition	Total Patients	Percentage	Disease/condition	Total Patients	Percentage
10	Hypertension	10374	1.36	Viral fever	18841	2.11
11	Anemia	8872	1.16	Hypertension	13797	1.54
12	Chronic obstructive pulmonary diseases	8215	1.08	Road traffic accident	13220	1.48
13	Urinary tract infection	5465	0.72	Anxiety and depressive disorders	12318	1.38
14	Anxiety and depressive disorders	4569	0.60	Abortion	10079	1.13
15	Head injury	3966	0.52	Urinary tract infection	8968	1.00

Morbidity profile of patients in district-level hospitals

Figure 7.2 shows the morbidity profile of patients in terms of the top 15 diseases/causes of admission among the indoor patients in the district and general hospitals. The total number of patients included in the analysis was 886,883. As in the upazila health complexes, diarrhea (12.65%) was the commonest cause, for which the patients were admitted, followed by assault (7.12%). The next three causes in order of percentages in both sexes were pneumonia (3.93%), road traffic accidents (3.89%), and peptic ulcer (3.40%).

Table 7.3. Top 10 diseases/causes of admission in upazila health complexes in 2012 and 2013

Percentage trends	Disease/Cause of admission	2013*		2012**		Ranking changes
		Ranking	Percentage	Ranking	Percentage	
↓	Diarrhea	1	17.32	1	17.74	-
↑	Assault	2	13.59	2	13.51	-
↑	Peptic Ulcer	3	6.90	3	6.43	-
↓	Pneumonia	4	5.23	4	6.41	-
↓	Enteric Fever	5	3.19	5	3.48	-
↑	Bronchial Asthma	6	2.71	6	2.51	-
↓	Road Traffic Accident	7	2.39	7	2.40	-
↑	Poisoning	8	2.31	9	2.23	+1
↑	Viral fever	9	2.30	8	2.24	-1
↑	Anemia	10	1.79	10	1.56	-

*2013: Number of patients: 1,656,689; **2012: Number of patients in 2012: 1,786,451

Among the total patients, 451,238 were female (about 51%), and 435,645 were male (about 49%). Table 7.4 shows the sex-wise distribution of diseases or causes of admission.

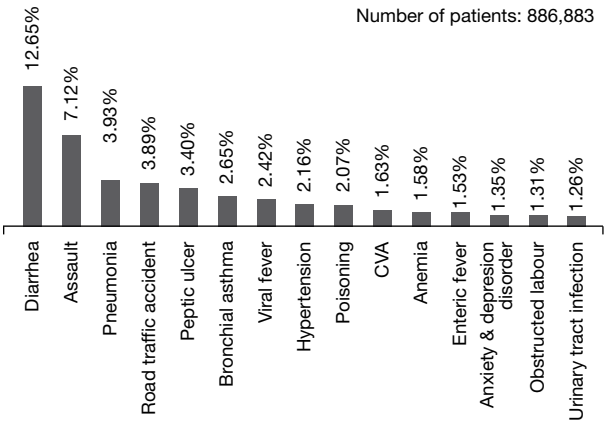


Figure 7.2. Top 15 diseases/causes of admission among the indoor patients in district level hospitals (n=57) in 2013

The percentage and ranking of top 10 causes of admissions in both sexes in district level hospitals in 2013 were similar to those in 2012, although there are some differences (Table 7.5). Increased percentages were noticed for diarrhea, road traffic accident, peptic ulcer, bronchial asthma, viral fever, hypertension and cerebrovascular accident (CVA). Percentages decreased for the cases of assault, pneumonia and poisoning. However, the rankings of the causes of admission were almost identical with those in the previous year.

Morbidity profile of patients in medical college hospitals

Figure 7.3 shows the morbidity profiles of admitted patients in terms of the top 15 diseases/causes of admission reported from the medical college hospitals. At the time of analysis, we received data from 14 medical college hospitals. Total number of patients included in the analysis was 478,008. The medical college hospitals, from which data were available at the time of analysis, were: Sher-e-Bangla Medical College Hospital, Barisal; Chittagong Medical College Hospital, Chittagong;

Table 7.4. Sex-wise prevalence of top 15 diseases/causes of admission among the admitted patients in the district-level hospitals in 2013

Rank	Male*			Female**		
	Disease/condition	Total patients	Percentage	Disease/condition	Total patients	Percentage
1	Diarrhea	58952	13.53	Diarrhea	53198	11.79
2	Assault	39226	9.00	Assault	23899	5.30
3	Road traffic accident	24084	5.53	Peptic ulcer	15994	3.54
4	Pneumonia	20819	4.78	Pneumonia	14074	3.12
5	Peptic ulcer	14182	3.26	Obstructed labour	11571	2.56
6	Bronchial asthma	12350	2.83	Bronchial asthma	11140	2.47
7	Viral fever	11559	2.65	Hypertension	10687	2.37
8	Poisoning	9059	2.08	Road traffic accident	10397	2.30
9	Hypertension	8451	1.94	Viral fever	9923	2.20
10	CVA	8186	1.88	Anxiety and depressive disorders	9441	2.09
11	Myocardial infarction	8021	1.84	Poisoning	9338	2.07
12	Enteric fever	7139	1.64	Abortion	8499	1.88

Table 7.4. continued

Rank	Male*			Female**		
	Disease/condition	Total patients	Percentage	Disease/condition	Total patients	Percentage
13	Fracture	5829	1.34	Anemia	8332	1.85
14	Anemia	5685	1.30	Urinary tract infection	6680	1.48
15	Septicemia	4850	1.11	Enteric Fever	6409	1.42

***Number of male patients: 451,238; **Number of female patients: 435,645**

Comilla Medical College Hospital, Comilla; Dhaka Medical College Hospital, Dhaka; Faridpur Medical College Hospital, Faridpur; Mymensingh Medical College Hospital, Mymenshingh; Shaheed Suhrawardy Medical College Hospital, Dhaka; Sir Salimullh Medical College Hospital, Mitford, Dhaka; Khulna Medical College Hospital, Khulna; Shahid Ziaur Rahman Medical College Hospital, Bogra; Rajshahi Medical College Hospital, Rajshahi; Dinajpur Medical College Hospital, Dinajpur; Rangpur Medical College Hospital, Rangpur, and MAG Osmani Medical College Hospital, Sylhet.

The most frequent cause for admission (in both sexes) was road traffic accident (6.12%). The next three causes were assault (5.70%), diarrhoea (3.01%), and fracture (2.77%).

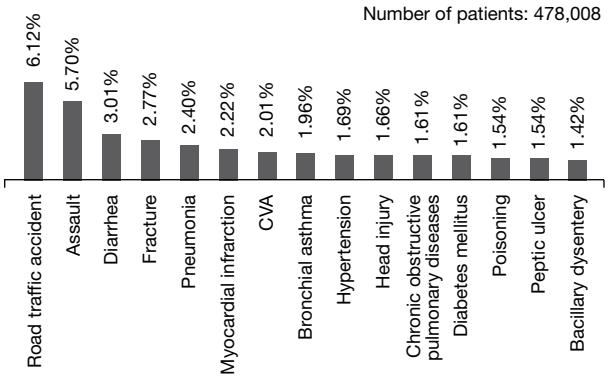


Figure 7.3. Top 15 diseases/causes of admission of patients in medical college hospitals (n=14) in 2013

Table 7.5. Top 10 diseases/causes of admission in district-level hospitals in 2012 and 2013

Percentage trends	Disease/cause of admission	2013*		2012**		Ranking changes
		Ranking	Percentage	Ranking	Percentage	
↑	Diarrhea	1	12.65	1	12.24	-
↓	Assault	2	7.12	2	7.91	-
↓	Pneumonia	3	3.93	3	5.17	-
↑	Road traffic accident	4	3.89	4	3.71	-
↑	Peptic ulcer	5	3.40	5	3.22	-
↑	Bronchial asthma	6	2.65	6	2.44	-
↑	Viral fever	7	2.42	7	2.30	-
↑	Hypertension	8	2.16	9	2.04	+1
↓	Poisoning	9	2.07	8	2.12	-1
↑	CVA	10	1.63	11	1.59	+1

***2013: Number of patients: 886,883; **2012: Number of patients: 955,127**

Among the total 478,008 patients, 214,129 were female (about 45%), and 263,879 were male (about 55%). Table 7.6 shows the sex-wise distribution of diseases or causes of admission in the medical college hospitals. Although road traffic accident was the top-ranking cause of admission in both sexes, the percentage was much less in female. Prevalence of myocardial infarction (commonly dubbed as 'heart attack') was also less in female. On the other hand, anxiety and depressive disorder appeared only in the female side of this ranking table.

Compared to the previous year, percentages of assault, diarrhea, fracture, pneumonia, asthma, and head injury increased this year while percentages of road traffic accident, myocardial infarction, cerebrovascular accident (CVA), and hypertension decreased as causes of admission in the medical college hospitals (Table 7.7).

This year, the number of medical college hospitals sending reports increased to 14 from 6 of last year, and number of patients under analysis is more than twice than that of previous year. Some big changes of the ranking may be due to this fact.

Sex difference in morbidity profile

There are some interesting differences in the prevalence of causes of admission between males and females. Among all the patients admitted in the hospitals of the above three groups (upazila

Table 7.6. Sex-wise prevalence of top 15 diseases/causes of admission among the admitted patients of medical college hospitals (n=14) in 2013

Rank	Male*			Female**		
	Disease/condition	Total patients	Percentage	Disease/condition	Total patients	Percentage
1	Road traffic accident	20186	13.53	Road traffic accident	9065	4.23
2	Assault	18377	9.00	Assault	8892	4.15
3	Fracture	8435	5.53	Abortion	6613	3.09
4	Diarrhea	7897	4.78	Diarrhea	6472	3.02
5	Myocardial infarction	7310	3.26	Pneumonia	5134	2.40
6	Pneumonia	6337	2.83	Fracture	4828	2.25
7	CVA	5618	2.65	Bronchial asthma	4243	1.98
8	Head injury	5171	2.08	Poisoning	4127	1.93
9	Bronchial asthma	5105	1.94	CVA	3990	1.86
10	COPD	4969	1.88	Obstructed labour	3822	1.78
11	Diabetes mellitus	4593	1.84	Anxiety and depressive disorders	3797	1.77
12	Hypertension	4482	1.64	Hypertension	3602	1.68
13	Bacillary dysentery	4076	1.34	Anemia	3495	1.63
14	Peptic ulcer	4068	1.30	Myocardial infarction	3301	1.54
15	Bronchiolitis	3580	1.11	Peptic ulcer	3301	1.54

***Number of male patients: 263,879; **Number of female patients: 214,129**

Table 7.7. Top 10 diseases/causes of admission in medical college hospitals in 2011 and 2012

Percentage trends	Disease/Cause of admission	2013*		2012**		Ranking changes
		Ranking	Percentage	Ranking	Percentage	
↓	Road traffic accident	1	6.12	1	6.31	-
↑	Assault	2	5.70	2	4.92	-
↑	Diarrhea	3	3.01	10	1.65	+7
↑	Fracture	4	2.77	7	1.95	+3
↑	Pneumonia	5	2.40	8	1.89	+3
↓	Myocardial infarction	6	2.22	3	2.82	-3
↓	CVA	7	2.01	4	2.59	-3
↑	Bronchial asthma	8	1.96	Was not in the list of top15 diseases in 2012		
↓	Hypertension	9	1.69	6	2.02	-3
↑	Head injury	10	1.66	Was not in the list of top15 diseases in 2012		

*2012: Number of patients: 478,008; Number of hospitals: 14; **2011: Number of patients: 226,476; Number of hospitals: 6

health complex, district-level hospitals, and medical college hospitals) in 2013, we analyzed the sex-wise differences in the prevalence of the conditions, which are applicable to both of the sexes. Total number of patients included in the analysis was 3,021,580, out of which 1,559,792 were female (about 52%), and 1,461,788 were male (about 48%).

Figure 7.4 shows the leading diseases with higher prevalence in female (having difference of >0.4%). In this category (female predominance), anxiety and depressive disorder had the largest percentage difference (0.98%) between female and male patients, followed by anemia and urinary tract infection.

Figure 7.5 shows the top causes of admission in which prevalence was higher in male (having difference of >0.4%). This category (male predominance) was led by assault, showing more than 4% difference between male and female patients. Road traffic accident also showed high difference (2.74%) between the sexes.

Table 7.8 shows the top 10 causes of admissions in both sexes in the abovementioned hospitals.

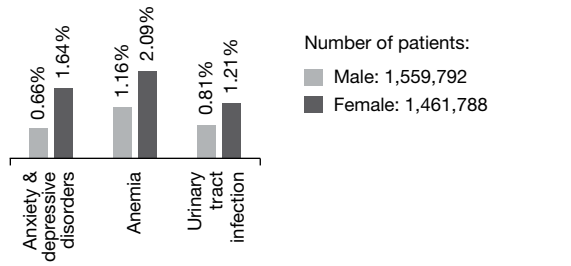


Figure 7.4. Causes of admission with higher prevalence in female patients

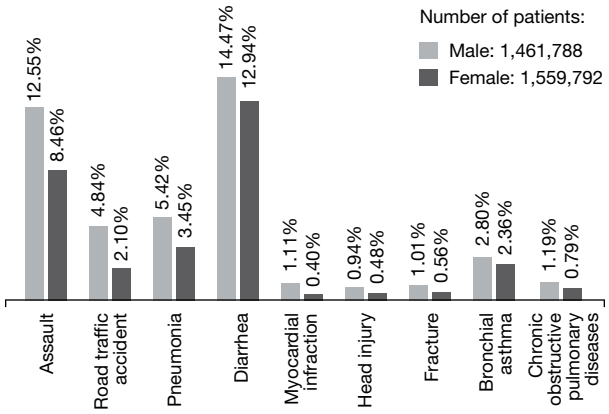


Figure 7.5. Causes of admission with higher prevalence in male patients

Table 7.8. Top causes of admissions in both sexes in 2013

Rank	Male*			Female**		
	Cause of admission	Number	Percentage	Cause of admission	Number	Percentage
1	Diarrhea	211591	14.47	Diarrhea	201827	12.94
2	Assault	183498	12.55	Assault	131987	8.46
3	Pneumonia	79261	5.42	Peptic ulcer	81157	5.20
4	Road traffic accident	70725	4.84	Pneumonia	53775	3.45
5	Peptic ulcer	70642	4.83	Obstructed labour	38290	2.45
6	Bronchial asthma	40901	2.80	Bronchial asthma	36882	2.36
7	Enteric fever	37056	2.53	Enteric fever	34775	2.23
8	Viral fever	32677	2.24	Poisoning	33105	2.12
9	Poisoning	31014	2.12	Road traffic accident	32682	2.10
10	Hypertension	23307	1.59	Anemia	32675	2.09

*Total patients: 1,461,788; **Total patients: 1,559,792

Morbidity profile of patients in postgraduate institute hospitals: ICD 10-based reporting in local health bulletins

From 2012, all public hospitals and health organizations of Bangladesh publish their local health bulletins online. An innovative software automatically creates the health bulletins as soon as the local organizations enter their data, and the bulletins are instantly published on the web site for global access. The morbidity profiles of indoor patients in the postgraduate teaching hospitals, namely National Institute of Traumatology, Orthopedics and Rehabilitation (NITOR), National Institute of Kidney Diseases and Urology (NIKDU), National Institute of Cardiovascular Diseases (NICVD), National Institute of Cancer Research and Hospital (NIRCH), and National Institute of Mental Health & Research (NIMHR) have been taken from their respective local health bulletins published in 2014 (containing data of 2013). Local health bulletins of 2014 used ICD 10 codes for morbidity reporting. Since we are in the very early stage of implementing ICD 10 for morbidity and mortality reporting, some mistakes are there. MIS-Health, with support from WHO is providing training to the concerned personnel (doctors, health managers, and statisticians) on ICD 10-based reporting and we hope that the quality of the reporting will continue to improve in coming days.

Table 7.9 summarizes the morbidity profile of the indoor patients in the National Institute of Traumatology, Orthopedics and Rehabilitation (NITOR). Total number of patients was 19,947. Road traffic accident was the leading cause for admission.

Table 7.10 summarizes the morbidity profile of the indoor patients in the National Institute of Kidney Diseases and Urology (NIKDU). The table shows that among the 4,741 patients, 2,988 were male (63.02%), and 1,753 were female (36.98%). Chronic kidney disease of stage 5 was the leading cause of admission (34.32%), followed by nephrotic syndrome (12.78%). Acute renal failure appeared third position (10.06%). Chronic renal failure and unspecified chronic kidney diseases appeared in the fourth and fifth position and were responsible for 6.01% and 5.17% of admissions respectively.

Table 7.11 summarizes the morbidity profile of the indoor patients in the National Institute of Mental Health & Research (NIMHR). Total number of patients were 2,140, among whom 1,320 were adult male (61.68%), 744 were adult

Table 7.9. Morbidity profile of the indoor patients (all ages and both sexes) in NITOR in 2013

Sl. No.	ICD 10 code	Cause of admission	Number of patients	Percentage
1	V89.2	Person injured in unspecified motor-vehicle accident, traffic	4486	22.49
2	V87.0	Person injured in collision between car and two- or three-wheeled motor vehicle (traffic)	3215	16.12
3	V87.2	Person injured in collision between car and pick-up truck or van (traffic)	2182	10.94
4	V87.3	Person injured in collision between car and bus (traffic)	1128	5.65
5	M96.6	Fracture of bone following insertion of orthopedic implant, joint prosthesis, or bone plate	2050	10.28
6	M99	Biomechanical lesions, NEC	1280	6.42
7	Y07	Other maltreatment (like physical abuse)	370	1.85
8	Y00	Assault by blunt object	280	1.4
9	T09.3	Injury of spinal cord, level unspecified	235	1.18
10	M86	Osteomyelitis	144	0.72

Total patients: 19,947

Table 7.10. Morbidity profile of the indoor patients (all ages and both sexes) in NIKDU in 2013

Sl. No.	ICD 10 code	Cause of admission	Number of patients	Percentage
1	N18.5	N185 Chronic kidney disease, stage 5	1627	34.32
2	N04	Nephrotic syndrome	606	12.78
3	N17	Acute renal failure	477	10.06
4	N18	Chronic renal failure	285	6.01
5	N18.9	Chronic kidney disease, unspecified	245	5.17
6	N00	Acute nephritic syndrome	214	4.51
7	N13	Obstructive and reflux uropathy	374	7.89
8	N20	Calculus of kidney and ureter	416	8.77
9	N40	Hyperplasia of prostate	258	5.44
10	C64	Malignant neoplasm of kidney, except renal pelvis	238	5.02

Total patients: 4,741; Male: 2,988; Female: 1,753

female (34.76%), and 76 were children (3.55%). Manic episode was the leading cause of admission (39.81%), followed by schizophrenia (34.86%).

Table 7.12 summarizes the causes of admissions in the National Institute of Cancer Research and Hospital (NICRH). In total, 3,622 patients were admitted in this hospital; among them 1,225 were adult female (33.82%), 1,820 were adult male (50.25%), and 577 were children (15.93%). As in the previous year, carcinoma of lungs or bronchus ranked first in terms of the number of admitted patients (15.74%). Breast and ovarian cancers appeared in the 2nd and 3rd position respectively.

Table 7.13 shows the causes of admissions in the National Institute of Cardiovascular Diseases (NICVD) in 2013. Total number of admitted

Table 7.11. Morbidity profile of the indoor patients (all ages and both sexes) in NIMHR in 2013

Sl. No.	ICD 10 code	Cause of admission	Number of patients	Percentage
1	F30	Manic episode	852	39.81
2	F20	Schizophrenia	746	34.86
3	F41	Other anxiety disorders	160	7.48
4	F19	Mental and behavioral disorders due to multiple drug use and use of other psychoactive substances	158	7.38
5	F79	Unspecified mental retardation	80	3.74
6	G40	Epilepsy	34	1.59
7	F42	Obsessive-compulsive disorder	33	1.54
8	F03	Unspecified dementia	23	1.07
9	F60	Specific personality disorders	13	0.61
10	R401	Stupor	12	0.56

Total patients: 2,140

Table 7.12. Morbidity profile of the indoor patients (all ages and both sexes) in NICRH in 2013

Sl. No.	ICD 10 code	Cause of admission	Number of patients	Percentage
1	C349	Bronchus or lung, unspecified	570	15.74
2	C509	Breast, unspecified	305	8.42
3	C56	Malignant neoplasm of ovary	200	5.52
4	C699	Eye, unspecified	169	4.67
5	C539	Cervix uteri, unspecified	167	4.61
6	C169	Stomach, unspecified	152	4.20
7	C499	Connective and soft tissue, unspecified	124	3.42

Table 7.12. continued

Sl. No.	ICD 10 code	Cause of admission	Number of patients	Percentage
8	C419	Bone and articular cartilage, unspecified	95	2.62
9	C189	Colon, unspecified	87	2.4
10	C20	Malignant neoplasm of rectum	84	2.32

Total patients: 3,622

patients was 43,341 and among them, 12,916 were female (29.80%), and 30,425 were male (70.20%). The difference in the number of admitted male and female patients was the highest in this organization. Acute myocardial infarction was the leading cause of admissions (30.27%) among both sexes, followed by hypertensive heart disease (15.82%), and multiple valve disease (9.37%).

Table 7.13. Morbidity profile of the indoor patients (all ages and both sexes) in NICVD in 2013

Sl. No.	ICD 10 code	Cause of admission	Number of patients	Percentage
1	I21	Acute myocardial infarction	13121	30.27
2	I11	Hypertensive heart disease	6856	15.82
3	I089	Multiple valve disease, unspecified	4060	9.37
4	Q20	Congenital malformations of cardiac chambers and connections	3766	8.69
5	I50	Heart failure	3739	8.63
6	I70	Atherosclerosis	3627	8.37
7	I330	Acute and subacute infective endocarditis	2964	6.84
8	I501	Left ventricular failure	1697	3.92
9	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection	1637	3.78
10	C759	Endocrine gland, unspecified	329	0.76

Total patients: 43,341

CHAPTER 8

MORTALITY PROFILE

ICD 10-based reporting: Targeting every death to count

The capacity and accuracy of ICD 10-based mortality and morbidity reporting of the concerned personnel of public hospitals are steadily increasing. It is now mandatory for the public hospitals to use ICD 10 for presenting mortality and morbidity data in the Local Health Bulletins (online health bulletins uploaded by all health organizations of Bangladesh). To analyze mortality profile for 2013, data were extracted from the Local Health Bulletins of upazila health complexes, district hospitals, medical college hospitals, and postgraduate institute hospitals. From these hospitals a total of 120,392 deaths were reported in 2013. The largest proportion of those deaths was reported from medical college hospitals (39.25%); upazila health complexes closely followed them by reporting 38.81% of the deaths. District-level hospitals and the postgraduate institute hospitals contributed respectively 18.19% and 3.75% of the total hospital death toll.

Table 8.1 shows the type of hospitals where from mortality data for 2013 were collected.

Causes of deaths in all hospitals

Distribution of causes of deaths among chapters of ICD 10 reference book

We analyzed the causes of death separately for each type of the hospitals mentioned above. To get an overall mortality profile of the country, we performed another analysis combining the data

Table 8.1. Reported deaths from different types of hospitals

Type of hospital	Total hospitals	Data received from hospitals		Reported deaths	
	No.	No.	%	No.	%
Upazila health complex	424	381	89.86	46724	38.81
District, general and other 200-250 bed hospital	63	58	92.06	21895	18.19
Medical college hospital	14	12	85.71	47258	39.25
National Institute of Cardiovascular Diseases (NICVD)	1	1	100.0	3117	2.59
National Institute of Kidney Diseases & Urology (NIKDU)	1	1	100.0	176	0.15
National Institute of Cancer Research & Hospital (NICRH)	1	1	100.0	110	0.09
National Institute of Traumatology and Rehabilitation (NITOR)	1	1	100.0	174	0.14
National Institute of Chest Disease and Hospital (NIDCH)	1	1	100.0	938	0.78
Total	**506**	**456**	**89.24**	**120392**	**100.00**

Table 8.2. Distribution of the top causes of death among ICD 10 chapters in 451 public hospitals (total death due to top causes: 48,818) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	3157	6.47
II	Neoplasms	178	0.36
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	302	0.62

Table 8.2. continued

Chapter no.	Chapter name	No. of deaths	%
IV	Endocrine, nutritional and metabolic diseases	445	0.91
V	Mental and behavioral disorders	11	0.02
VI	Disease of the nervous system	1897	3.89
VII	Diseases of the eye and adnexa	2	0.00
VIII	Diseases of the ear and mastoid process	6	0.01
IX	Diseases of the circulatory system	16206	33.20
X	Diseases of the respiratory system	6787	13.90
XI	Diseases of the digestive system	261	0.53
XII	Diseases of the skin and subcutaneous tissue	12	0.02
XIII	Diseases of the musculoskeletal system and connective tissue	90	0.18
XIV	Diseases of the genitourinary system	1042	2.13
XV	Pregnancy, childbirth and the puerperium	123	0.25
XVI	Certain conditions originating in the perinatal period	7779	15.93
XVII	Congenital malformations, deformations, and chromosomal abnormalities	82	0.17
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	538	1.10
XIX	Injury, poisoning, and certain other consequences of external causes	4521	9.26
XX	External causes of morbidity and mortality	5379	11.02
	Total	48818	100.00

of upazila health complexes (UHC), district and general hospitals (DH and GH) as well as medical college hospitals (MCH) as they admit all types of patients (unlike the specialized institutes). A total of 115,877 deaths were reported from these three types of hospitals. ICD 10 codes were mentioned for top causes of death in each of the hospitals and the number of deaths with the top 10 causes was 48,818 out of which 6,511 were in UHC, 13,013 were in DH, and 29,294 were in MCH. Total number of reporting hospitals were 451 (381 UHCs, 58 DHs and GHs and 12 MCHs). Table 8.2 shows the distribution of the top causes of deaths among ICD 10 chapters. The highest number of deaths was caused by the diseases or conditions mentioned in the 9th chapter which consists of diseases of the circulatory system (16,206 deaths, 33.2%).

Top 10 causes of deaths according to ICD 10 three-digit codes

Figure 8.1 shows the top 10 causes of deaths across the 451 public hospitals. Three-digit ICD 10 codes and the number of reported deaths are shown in parentheses inside the figure. In the case of transport accidents, we used the corresponding ICD 10 block (V01-V99), instead of three-digit code, to show all types of transport accidents under a single entity. Birth asphyxia and transport accidents appeared as the leading causes of deaths.

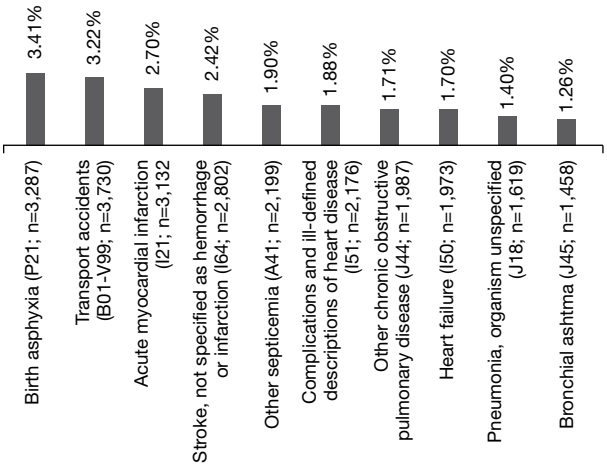


Figure 8.1. Top 10 causes of death as percentage of total deaths reported from 451 public hospitals (total deaths: 46,724) (2013)

Table 8.3. Distribution of top causes of death among ICD 10 chapters in 381 UHCs (total deaths due to top causes: 6,511) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	379	5.82
II	Neoplasms	65	1.00
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	89	1.37
IV	Endocrine, nutritional and metabolic diseases	40	0.61
V	Mental and behavioral disorders	11	0.17
VI	Disease of the nervous system	125	1.92
VII	Diseases of the eye and adnexa	1	0.02
VIII	Diseases of the ear and mastoid process	6	0.09
IX	Diseases of the circulatory system	1804	27.71
X	Diseases of the respiratory system	2166	33.27
XI	Diseases of the digestive system	156	2.40
XII	Diseases of the skin and subcutaneous tissue	6	0.09
XIII	Diseases of the musculoskeletal system and connective tissue	1	0.02
XIV	Diseases of the genitourinary system	68	1.04
XV	Pregnancy, childbirth and the puerperium	45	0.69
XVI	Certain conditions originating in the perinatal period	426	6.54
XVII	Congenital malformations, deformations, and chromosomal abnormalities	27	0.41
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	222	3.41
XIX	Injury, poisoning, and certain other consequences of external causes	472	7.25
XX	External causes of morbidity and mortality	402	6.17
	Total	6511	100.00

Causes of deaths by type of hospitals

Upazila health complex

Table 8.3 shows the top 10 causes of death in 381 upazila health complexes distributed among ICD 10 chapters (total deaths 46,724; top 10 causes included 6,511 deaths). The top five disease groups included diseases of the respiratory system (2,166 deaths, 33.27%); diseases of the circulatory system (1,804 deaths, 27.71%); injury, poisoning, and certain other consequences of external causes (472 deaths, 7.25%); certain conditions originating in the perinatal period (426 deaths, 6.54%), and external causes of morbidity and mortality (402 deaths, 6.17%).

Figure 8.2 shows the top 10 causes of death in 381 upazila health complexes according to ICD 10 three-digit codes. Three-digit ICD 10 codes and the number of reported deaths are shown in parentheses inside the figure. In the case of transport accidents, we used the corresponding ICD 10 block (V01-V99), instead of three-digit code, to show all types of transport accidents under a single entity. Asthma and pneumonia (due to unspecified organisms) appeared as the leading causes of deaths.

District and general hospitals

Table 8.4 and Figure 8.3 show the distribution of top causes of deaths among ICD 10 chapters in 58 district and general hospitals (total deaths 21,895; top causes included 13,013 deaths).

The top 5 disease groups included diseases of the circulatory system (4,869 deaths, 37.42%); certain conditions originating in the perinatal period

Table 8.4. Distribution of top causes of death among ICD 10 chapters in 58 DHs and GHs (total deaths due to top causes: 13,013) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	555	4.26
II	Neoplasms	53	0.41
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	213	1.64
IV	Endocrine, nutritional and metabolic diseases	128	0.98
V	Mental and behavioral disorders	0	0.00
VI	Disease of the nervous system	259	1.99
VII	Diseases of the eye and adnexa	1	0.01
VIII	Diseases of the ear and mastoid process	0	0.00
IX	Diseases of the circulatory system	4869	37.42
X	Diseases of the respiratory system	1744	13.40
XI	Diseases of the digestive system	42	0.32
XII	Diseases of the skin and subcutaneous tissue	6	0.05
XIII	Diseases of the musculoskeletal system and connective tissue	0	0.00
XIV	Diseases of the genitourinary system	246	1.89
XV	Pregnancy, childbirth and the puerperium	47	0.36
XVI	Certain conditions originating in the perinatal period	3295	25.32
XVII	Congenital malformations, deformations, and chromosomal abnormalities	55	0.42
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	254	1.95
XIX	Injury, poisoning, and certain other consequences of external causes	661	5.08
XX	External causes of morbidity and mortality	585	4.50
	Total	13013	100

(3,295 deaths, 25.32%); diseases of the respiratory system (1,744 deaths, 13.4%); injury, poisoning, and certain other consequences of external causes (661 deaths, 5.08%); and external causes of morbidity and mortality (585 deaths, 4.5%).

Medical college hospitals

Table 8.5 and Figure 8.4 show the distribution of top causes of death distributed among ICD 10 chapters in 12 medical college hospitals (total deaths 47,258; top causes included 29,294 deaths). The top 5 disease groups included diseases of the circulatory system (9,533 deaths, 32.54%); external causes of morbidity and mortality (4,393 deaths, 14.99%); certain conditions originating in the perinatal period (4,058 deaths, 13.85%); injury, poisoning, and certain other consequences of external causes (3,388 deaths, 11.57%), and diseases of the respiratory system (2,877 deaths, 9.82%).

Postgraduate institute hospitals

National Institute of Cardiovascular Diseases (NICVD)

Figure 8.5 shows the distribution of causes of death in the National Institute of Cardiovascular Diseases (NICVD). ICD 10 codes and number of cases are shown in parentheses inside the figure. In more than one-third cases (35.19%), acute myocardial infarction was the cause of death.

National Institute of Kidney Diseases & Urology (NIKDU)

Figure 8.6 shows the distribution of causes of death in the National Institute of Kidney Diseases and Urology (NIKDU). ICD 10 codes and number of

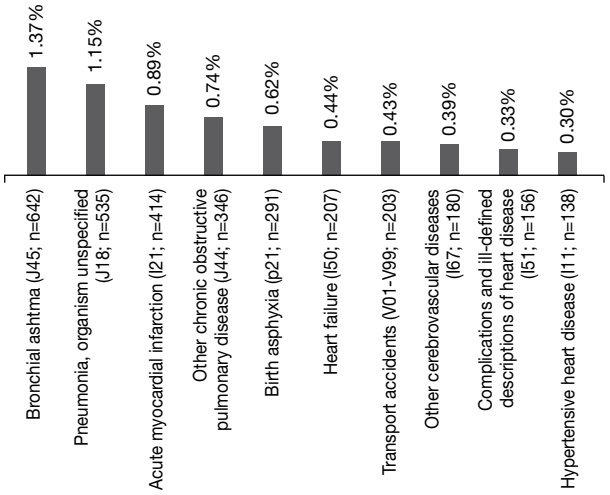


Figure 8.2. Top 10 causes of death as percentage of total deaths reported in 381 UHCs (total deaths: 46,724) (2013)

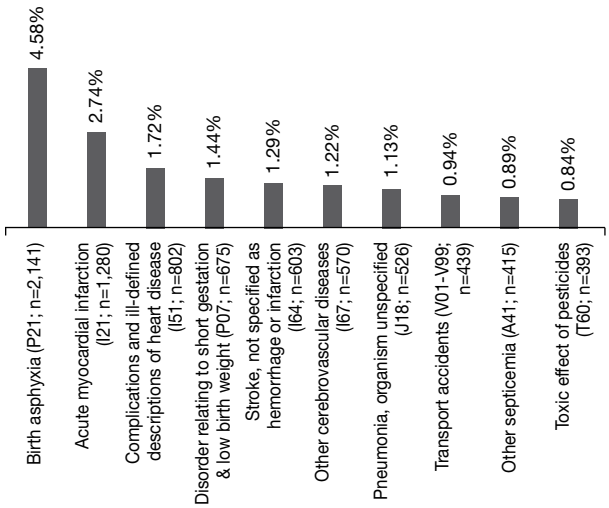


Figure 8.3. Top 10 causes of death as percentage of total deaths reported in 58 DHs and GHs (total deaths: 46,724) (2013)

Table 8.5. Distribution of top causes of death among ICD 10 chapters in 12 MCHs (total deaths due to top causes: 29,294) (2013)

Chapter no.	Chapter name	No. of deaths	%
I	Certain infectious and parasitic diseases	2223	7.59
II	Neoplasms	60	0.20
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	0	0.00
IV	Endocrine, nutritional and metabolic diseases	277	0.95
V	Mental and behavioral disorders	0	0.00
VI	Disease of the nervous system	1513	5.16
VII	Diseases of the eye and adnexa	0	0.00
VIII	Diseases of the ear and mastoid process	0	0.00
IX	Diseases of the circulatory system	9533	32.54
X	Diseases of the respiratory system	2877	9.82
XI	Diseases of the digestive system	63	0.22
XII	Diseases of the skin and subcutaneous tissue	0	0.00
XIII	Diseases of the musculoskeletal system and connective tissue	89	0.30
XIV	Diseases of the genitourinary system	728	2.49
XV	Pregnancy, childbirth and the puerperium	31	0.11
XVI	Certain conditions originating in the perinatal period	4058	13.85
XVII	Congenital malformations, deformations, and chromosomal abnormalities	0	0.00
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	62	0.21
XIX	Injury, poisoning, and certain other consequences of external causes	3388	11.57
XX	External causes of morbidity and mortality	4392	14.99
	Total	29294	100.00

deaths are shown in parentheses inside the figure. Chronic kidney disease of stage 5 appeared as the leading cause of deaths (39.2% deaths).

National Institute of Cancer Research & Hospital (NICRH)

Figure 8.7 shows the top 10 causes of death in the National Institute of Cancer Research & Hospital (NICRH). ICD 10 codes with corresponding number of deaths are shown in parentheses inside the figure. Malignant neoplasm of bronchus or lung was responsible for about 31% of deaths.

National Institute of Diseases of Chest & Hospital (NIDCH)

Figure 8.8 shows the distribution of causes of deaths in the National Institute of Diseases of Chest and Hospital (NIDCH) according to ICD 10 three-digit codes. Chronic obstructive pulmonary diseases (27.3%) and tuberculosis (22.6%) were the leading causes of deaths.

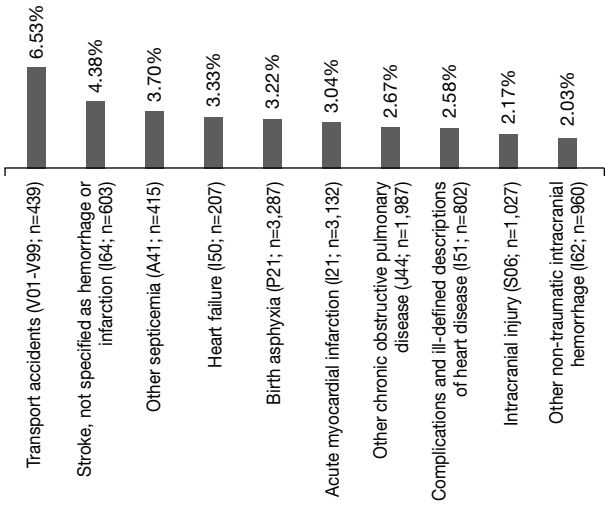


Figure 8.4. Top causes of death as percentage of total deaths reported in 12 MCHs (total deaths: 47,258) (2013)

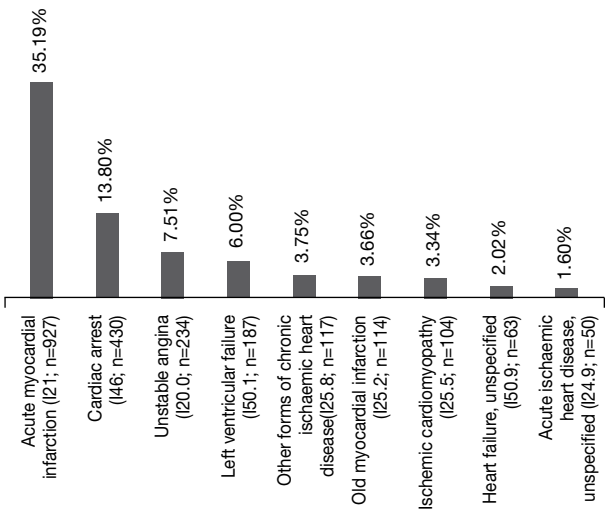


Figure 8.5. Top causes of death as percentage of total deaths reported in NICVD (total deaths: 3,117) (2013)

Limitations of mortality analysis

ICD 10 based mortality reporting by the public hospitals was started in 2012 and we anticipate some mistakes by the personnel concerned in this new system of reporting. However, as mentioned in the beginning of this chapter, we are pleased to note that the quality of reporting is constantly increasing. Till date the organizations are providing ICD 10 codes only for top 10 diseases in aggregated form. Hence, the distribution of causes of death among ICD 10 chapters was not based on causes of all deaths, rather the top 10 causes only. Also, age and sex disaggregation of the mortality data could not be shown from this aggregated form of report. We are hopeful to present more accurate and elaborate analyses in the future.

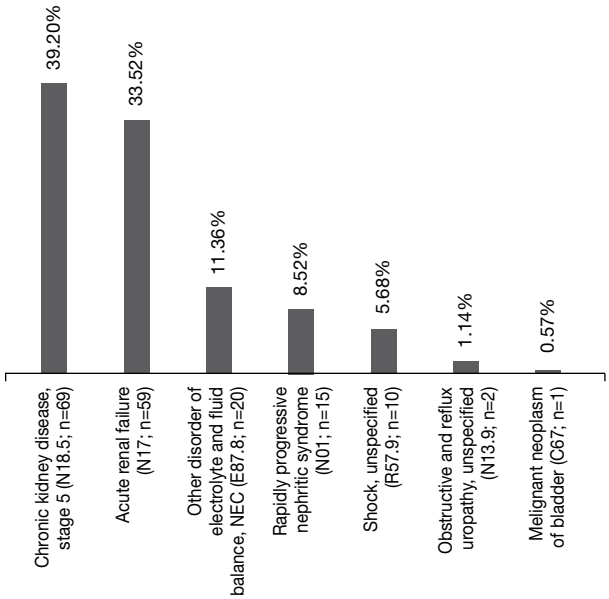


Figure 8.6. Top causes of death as percentage of total deaths reported in NIKDU (total deaths: 176) (2013)

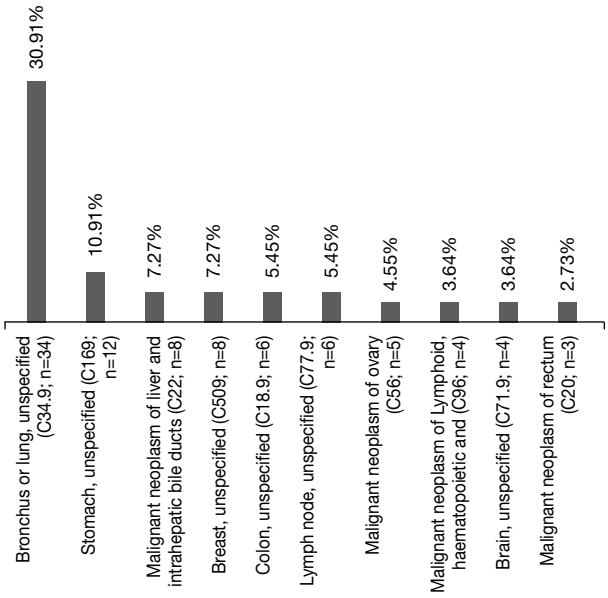


Figure 8.7. Top causes of death as percentage of total deaths reported in NICRH (total deaths: 110) (2013)

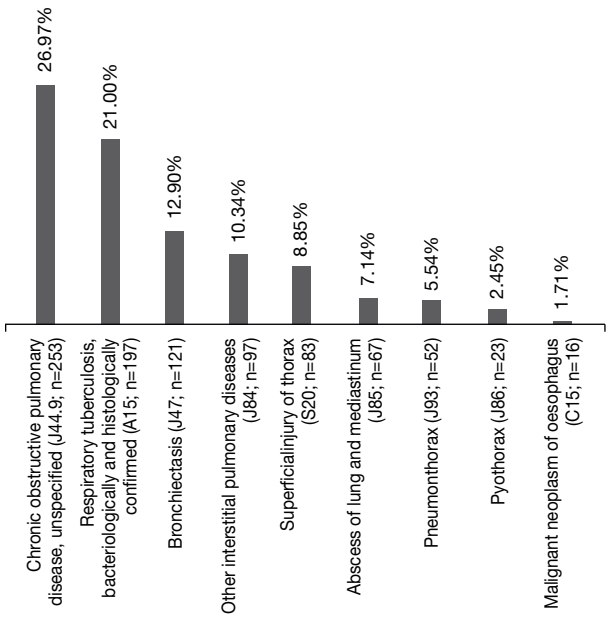


Figure 8.8. Top causes of death as percentage of total deaths reported in NIDCH (total deaths: 938) (2013)

CHAPTER 9

COMMUNICABLE DISEASE CONTROL IN BANGLADESH

Better management protocols increasingly keeping communicable diseases under control

The communicable diseases of public-health importance include malaria, kala-azar, infestation with filarial and other worms, avian influenza, and influenza by novel virus, tuberculosis, HIV/AIDS and STDs, emerging zoonotic diseases, like Nipah, anthrax, brucellosis, food and waterborne diseases, like hepatitis due to viruses, diarrheal disorders, enteric fever, and leptospirosis, arthropodborne diseases, like dengue and chikungunya.

Control of communicable diseases continues to remain a public-health priority both nationally and internationally. Bangladesh is a signatory of International Health Regulation (IHR) 2005 and has to build its capacity in terms of detection and response to case detection and outbreak of emerging diseases. IHR 2005 also requires strengthening of national capacity to deal with the public-health emergency with national and international concern. Bangladesh has a number of target-oriented programs on malaria, kala-azar, filarial and intestinal worms, avian and pandemic influenza and achieved visible progress. This chapter describes the country situation with some of the major communicable diseases as mentioned above.

Malaria

Malaria is one of the major public health problems in Bangladesh. Out of 64 districts in the country, 13 border districts in the east and northeast facing the eastern states of India and a small territory of Myanmar are reporting about 98% of the total malaria cases every year. The National Malaria Control Program (NMCP) is responsible for implementing malaria control interventions under the Communicable Disease Control Department of the DGHS.

Since 2007, the malaria control program activities have been strengthened and accelerated due to the funding support from the Global Fund (Round 6 and 9) and the partnership established with BRAC-led 21-member NGO Consortium, academic and research institutions, and the private sector. The goal of the National Malaria Control Program (NMCP) is "to reduce malaria morbidity and mortality until the disease is no longer a public-health problem in the country". One of the objectives of NMCP is to reduce malaria morbidity

Bangladesh is a signatory of International Health Regulation (IHR) 2005 and has to build its capacity in terms of detection and response to case detection and outbreak of emerging diseases ...

Map. Thirteen malaria-endemic districts of Bangladesh

Table 9.1 Summary of year-wise malaria epidemiological data (2000-2013) from the endemic districts

Year	Positive cases		*P. falciparum*		*P. vivax*		Death	
	No.	Per 1,000 population at risk	No.	%	No.	%	No.	Per 1,000 population at risk
2000	54223	5.565	39272	72.4	14951	27.6	478	0.049
2001	54216	5.476	39274	72.4	14942	27.6	490	0.049
2002	62269	6.189	46418	74.5	15851	25.5	588	0.058
2003	54654	5.346	41356	75.7	13298	24.3	577	0.056
2004	58894	5.669	46402	78.8	12492	21.2	535	0.052
2005	48121	4.559	37679	78.3	10442	21.7	501	0.047
2006	32857	3.063	24828	75.6	8029	24.4	307	0.029
2007	59857	5.460	46791	78.2	13066	21.8	228	0.021
2008	84690	7.726	70281	83.0	14409	17.0	154	0.014
2009	63873	5.827	57020	89.3	6853	10.7	47	0.004
2010	55873	5.097	52049	93.2	3824	6.8	37	0.003
2011	51773	3.908	49194	95.0	2579	5.0	36	0.003
2012	29518	2.228	27819	94.2	1699	5.8	11	0.001
2013	26891	2.030	25908	96.3	983	5.8	15	0.001

and mortality by 60% within 2015 compared to 2008. Increased access to diagnosis, treatment, and prevention by using LLINs/ITNs; strengthened surveillance, monitoring and evaluation; increased awareness of the population at risk through effective BCC; and enhance collaboration with NGOs and private sector are the main components of the program.

The achievement of the program in terms of reducing morbidity and mortality since 2008 is notable and praiseworthy. There is 68% and 90% reduction in malaria morbidity and mortality respectively in 2013 compared to 2008.

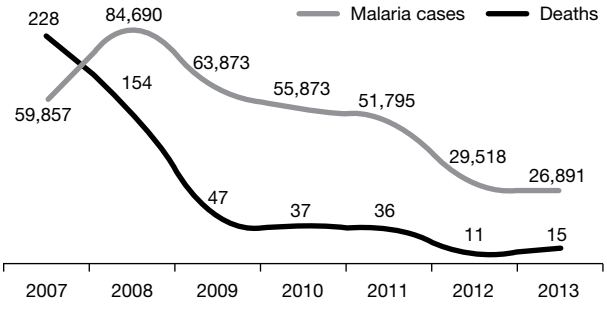


Figure 9.1. Epidemiological trend of malaria case incidence and death in the years from 2007 to 2013

There is significant progress in malaria control in Bangladesh during the period from 2007 to 2013, showing a progressive decline in total cases and deaths. The graph (Figure 9.1) shows the epidemiological trend of case incidence and deaths from 2007 through 2013.

The three Hill Tract Districts (Bandarban, Khagrachhari, and Rangamati) and Cox's Bazar district have reported 92% of the malaria cases and 80% of malaria deaths in 2013. Both *P. falciparum* and *P. vivax* malaria are prevalent in the country of which the number of reported *falciparum* cases is 96% of the total cases.

Figure 9.2 gives an idea about the share of total malaria burden by endemic districts in the year 2013.

Because of the paradigm shift of reducing cases and deaths, the program is now aiming for malaria elimination from the country. A new strategic plan 2015-2020 has been drafted with the vision of "Malaria-free Bangladesh." The goal of the National Strategic Plan (NSP) is "By 2020, to have achieved 'zero indigenous transmission' and 'zero death' aiming malaria elimination in Bangladesh." The strategic objectives of the NSP 2015-2020 are (i) to achieve 100% coverage of 'at-risk' population with appropriate malaria preventive

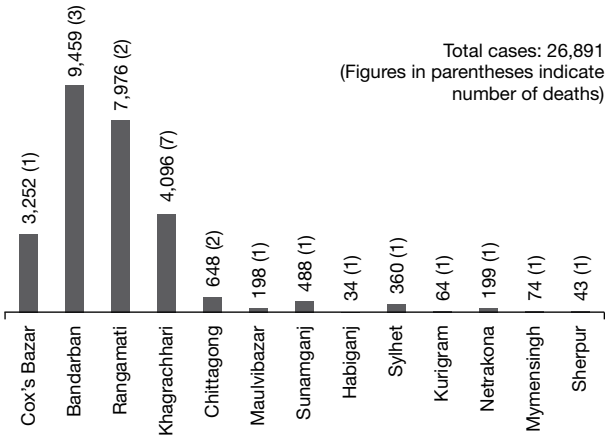


Figure 9.2. Malaria burden in 13 endemic districts in 2013

interventions by 2018; (ii) to have 100% malaria patients receiving early and quality diagnosis (RDT or microscopy) and effective treatment by 2018; (iii) to continue strengthening of program management towards elimination by 2020; (iv) to continue strengthening of disease and vector surveillance, monitoring and evaluation towards malaria elimination; (v) to intensify Advocacy, Communication and Social Mobilization (ACSM) for malaria elimination.

Dengue

In Bangladesh, dengue re-emerged in 2000 after an earlier outbreak as Dhaka Fever in the 1960s. The re-emergence resulted in huge number of cases, along with morbidity and mortality of public-health concern. Bangladesh demonstrated appreciable competence in managing the cases, with continued decline in mortality. Training of healthcare providers on dengue management and increased awareness might have contributed to the achievement. The prevalence shows rise in cases twice a year—once in May-June and the other in September-October. In other months of the year, low prevalence exists. Dengue is concentrated in urban settings due to unplanned urbanization with difficult-to-maintain sanitation, offering abundance of breeding place for *Aedes* mosquito. Table 9.2 shows the distribution of dengue cases, deaths, and case-fatality rates in Bangladesh by year beginning from 2000.

Filariasis

Bangladesh is one of the endemic countries for filariasis and known to be surrounded by endemic area of filariasis, particularly the northeast border area of India, which is adjacent to Assam, Bihar, and West Bengal. In Bangladesh; the disease is

Table 9.2. Distribution of dengue cases, deaths, and case-fatality rates by year

Year	No. of cases	Death	Case-fatality rate (%)
2000	5551	93	1.7
2001	2430	44	1.8
2002	6132	58	0.9
2003	486	10	2.1
2004	3934	13	0.3
2005	1048	4	0.4
2006	2200	11	0.5
2007	466	0	0.0
2008	1153	0	0.0
2009	474	0	0.0
2010	409	0	0.0
2011	1362	6	0.4
2012	671	1	0.1
2013	1749	2	0.1

present allover the country, with the highest endemicity in northern part of the country. Out of 160 million, about 20 million people of the area have been suffering from the disease, most of which are children. The exact figures of filariasis in Bangladesh are not known but it is endemic in 34 out of 64 districts of the country as reveled by ICT of LQAS done in 2001 and 2004. There is high endemicity of filariasis in Nilphamari, Thakurgaon, Dinajpur, Rangpur, Panchagarh, Kurigram, Chapainowabganj, Rajshahi, and Lalmonirhat. It is estimated that about 70 million are at risk of infection while 1 million people are with various forms of clinical deformity, and another 10 million people are affected with microfilariae (Mf).

Mass Drug Administration (MDA) was launched in November 2001 (1st round) among at-risk population of Panchagarh district and, thereafter, the program gradually was scaled up to 19 districts by 2008 following the result of baseline Mf survey. After several rounds of MDA in the area, the Mf result came down to less than 1% in 15 districts till 2013. On the basis of that result and following the WHO guideline, MDA has been stopped officially from 15 districts, namely Rajshahi, Dinajpur, Meherpur, Patuakhali, Barguna, Sirajganj, Pabna, Kushtia, Chuadanga, Pirojpur, Panchagarh, Thakurgaon, Chapainowabganj, Barisal, and Jhalokathi. It is one of the successes that remaining 4 districts are receiving MDA, and

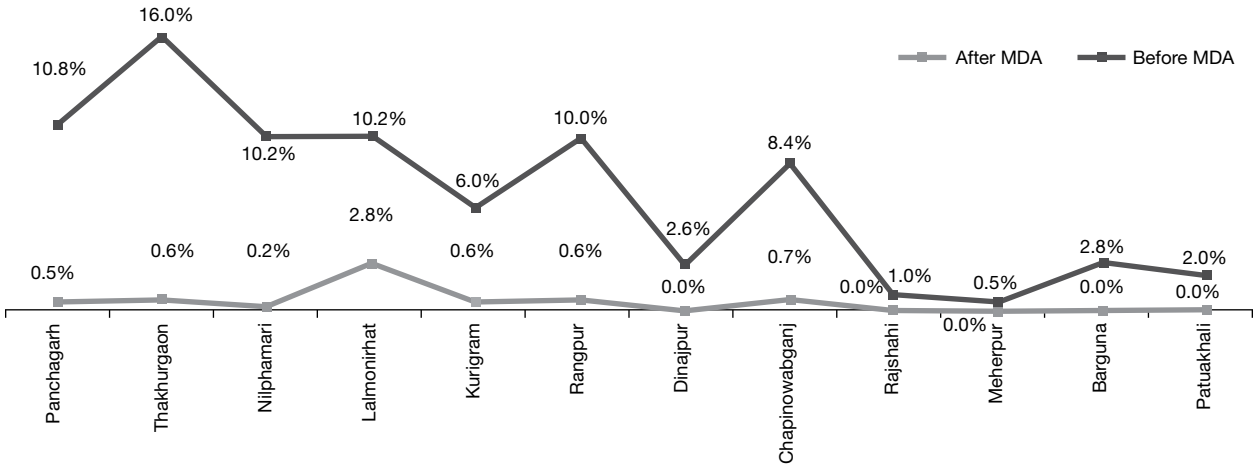


Figure 9.3. Impact of mass drug administration on filariasis prevalence in the endemic districts (2008-2009)

the level of Mf rate has come down to less than 1% by the survey of 2013 to achieve elimination before 2015.

Figure 9.3 shows the effects of MDA in the endemic districts.

Soil-transmitted helminthes (STH) control and nationwide deworming program

Both filariasis and intestinal worm infestation are caused by soil-transmitted helminthes (STH). So, albendazole is distributed as additional filariasis elimination strategy. The same drug also serves the purpose of intestinal deworming. Survey in 2005 showed the prevalence of intestinal worm infestation among school children to be 79.8%. As a response, nationwide deworming program was launched in 2008 through primary schools of all kinds, viz. government, non-government, registered, formal, non-formal, kindergarten, madrasa, moktab, etc. The deworming tablets are distributed among all 5 to 12 years old children twice a year by school teachers in each national round of deworming. So far, nine rounds of deworming have been completed with over 98% reported coverage. From May 2011, a new 'Little Doctors' initiative was launched to engage the senior pupils of primary level schools for peer education for STH control and developing healthy personal hygiene proctice. There are about 82,000 primary-level schools in Bangladesh, with about 20 million pupils. Eighteen senior pupils (viz. from Class IV and V) of each school are selected as 'Little Doctors', divided in six groups—one group for one class and are engaged in self-motivated practice of healthy habits and educating other pupils to practise the same, including intake of albendazole. The 'Little Doctors' initiative aims at creating 1.23 million little doctors each year with a view to making the program sustainable. It is assumed that adoption by even a small percentage of the 20 million children or the little doctors for healthy lifestyle throughout their lives will have huge positive impact on future health of the nation. There is a guideline for selection, orientation, and functioning of little doctors. A summary of year-wise deworming coverage with albendazole among school children up to 2013 is provided in the annex.

Kala-azar

Kala-azar (KA) is prevalent in about 100 countries that threaten 350 million people of the world and among them 90% of the disease burden belongs to 5 countries: India, Bangladesh, Nepal, Sudan and Brazil. It is also notable that estimated kala-azar cases are around 2.5 million, with an incidence of 500,000/year and 59,000 deaths/year. It is estimated that around 147 million people are at risk in three countries: Bangladesh, India, and Nepal, with about 100,000 cases occurring annually.

Bangladesh has set the target of elimination of kala-azar by 2015. The goal is to reduce the annual incidence of kala-azar to less than 1 patient per 10 thousand population. The strategic objectives are to ensure early diagnosis and complete management of the cases, to implement integrated vector management, to have patient and vector surveillance and to conduct operational research. At the end of the year, a new strategy called 'Zero or No kala-azar Transmission' has been taken to implement at the beginning of 2014.

In Bangladesh, kala-azar patients are detected and treated mainly through primary healthcare centres (upazila health complexes-UHC).

Immunochromatographic test (ICT) based on 'rK39' is being used for the diagnosis and Oral Miltefosine for treatment of cases. Injection Sodium Stibogluconate (SSG) had long been used for treatment of Kala-azar and post-kala-azar dermal leishmaniasis (PKDL) cases, and now to be phased out. Under WHO support for VL elimination program in Bangladesh, single-dose AmBisome has been introduced for the treatment of PK to the 11 hyper- and moderate endemic upazilas, and remaining 88 moderate and low-endemic upazilas will be covered very soon.

Vector management with indoor residual spray (IRS) has been started from post-monsoon 2011 through piloting in five unions of Fulbaria upazila. Four rounds of village-wise blanket IRS have been scaled up to 8 hyper-endemic upazilas both in pre-monsoon' and post-monsoon for 2012 and 2013 respectively. In addition, remaining 91 upazilas have conducted one round post-monsoon blanket and focal IRS, and 20 moderate upazilas have conducted one round pre-monsoon blanket and focal IRS. This IRS activity will be conducted in two rounds each year for three consecutive years totalling six rounds in all endemic upazilas.

Monthly reporting of kala-azar cases and case search are being run regularly under active and passive surveillance of KA cases. In addition, as a part of vector surveillance, pre- and post-IRS vector bionomics and susceptibility test are being done on regular basis. Moreover, operational research, like pharmaco-vigilence, vector bioassay test, clinical trial of combination therapy for the treatment of PK, etc. was conducted. This year, active case search activities in 8 hyper-endemic upazilas and 5 moderately endemic upazilas have been organized and conducted, and a healthy number of new PKDL and PK cases has been diagnosed and treated at the UHC.

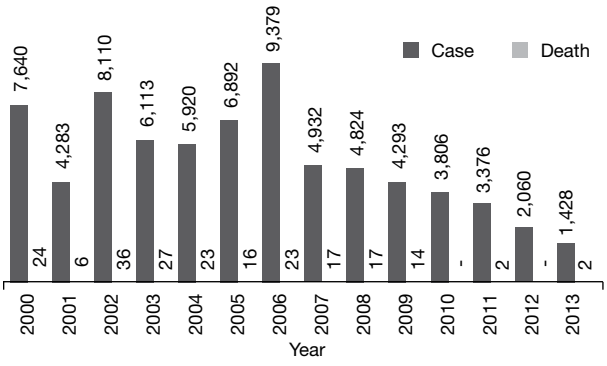


Figure 9.4. Year-wise number of kala-azar cases and death

After implementing the abovementioned activities under the guideline of kala-azar elimination program (KEP) and its strategy paper, it is found that PK and PKDL cases are gradually decreasing and ultimately reached to 1,103 PK cases and 325 PKDL cases this year (2013) from around 3,351 PK cases and 445 PKDL cases in 2010, considering endemicity of the upazilas, it has been found that, in 2013, we have only 3 hyper-endemic and 8 moderately endemic upazilas.

Figure 9.4 shows year-wise kala-azar cases and related deaths from 2000 through 2013.

Emerging and re-emerging disease control program

The emerging and re-emerging disease control program of DGHS is currently prioritizing the control of rabies, anthrax, Nipah, chikunguniya, and antimicrobial resistance. A goal has been set to eliminate rabies from the country by 2020. Collaborative action plan is also underway to combat other zoonotic diseases.

Rabies

Rabies was a neglected tropical zoonotic disease. It claims more than 2,000 lives annually in the country. This is the highest for any single infectious disease. Rabies, if manifested, is nearly 100% fatal but 100% preventable as well if appropriate preventive measures are taken. Annual number of dog-bites in Bangladesh varies between 200,000 and 300,000, and 95% of rabies occur due to dog-bites. Only suspected rabid dogs are thought to be responsible for rabies as dogs rarely can remain healthy. Other animals that occasionally transmit rabies in Bangladesh are cat, fox, monkey, jackal, and mongoose. Other than humans, an estimated 25,000 or more cattle succumb to rabies every year. In the national rabies elimination goal by 2020 a number of activities are being conducted, such as, national rabies survey, setting up of national and district rabies prevention and control centers, mass dog vaccination, and dog population management. To estimate the total dog population and annual events of dog-bites and rabies, a national rabies survey was conducted in 600 clusters allover the country, each cluster comprising 300 households and altogether covering a total of 180,000 households. A national rabies prevention and control center has been established at Infectious Diseases Hospital, Mohakhali, Dhaka, where about 350 to 450 dog-bite victims receive the service daily. Anti-rabies vaccines and rabies immunoglobulin are distributed free of charge from this center. In addition to the national center, 65 rabies prevention and control centers have

also been established at the district level where also dog-bite victims are receiving modern management. These district centers also distribute anti-rabies vaccines and rabies immunoglobulin free of charge. Mass dog vaccination, launched in 2011 in Cox's Bazar Sadar municipality as a pilot, is a unique idea to make the dog population immune from rabies so that any dog-bite does not transmit rabies to humans. If 70% of the existing dog population can be vaccinated, there will be herd immunity among the dog population, keeping them protected from rabies as well. Large-scale mass dog vaccination activities have been scaled to 37 districts of four divisions (Dhaka, Rajshahi, Sylhet, and Rangpur). The list of these districts is given in the annex. Intra-dermal tissue culture-based rabies vaccines are now being used replacing the locally-produced nerve tissue vaccines for dog-bites. For all these measures, the case-fatality rates are declining. The annex provides data on the year-wise rabies-related deaths at the Infectious Disease Hospital, Mohakhali, Dhaka.

Anthrax

Anthrax is caused by *Bacillus anthracis*, a bacterium that can form spores. Spores allow it to survive in the soil for long periods. Anthrax is primarily a disease of herbivorous mammals, such as cattle, sheep, goats, and buffaloes, which may have chance to ingest anthrax spores while grazing. Humans generally acquire the disease directly or indirectly from infected animals or from occupational exposure to infected or contaminated animal products. Control in livestock is, therefore, the key to reducing incidence. There is no documented case of person-to-person transmission. The impact of the disease on animal and human health can be devastating. The disease exists in animals and humans in most countries of Africa and Asia, in several southern European countries, in the Americas, and certain areas of Australia. Anthrax outbreaks in animals also occur sporadically in other countries. Prevalence of anthrax in Bangladesh was not well-documented earlier. However, since August 2009, the Institute of Epidemiology, Disease Control and Research (IEDCR) investigated 14 outbreaks of cutaneous anthrax in three districts of Bangladesh (Pabna, Sirajganj, and Tangail). Recently, more and more outbreaks are being reported. In 2012, a total of 176 cases of anthrax were reported from 5 districts–74 from Sirajganj, 67 from Meherpur, 16 from Bogra, 14 from Tangail, and 5 from Kushtia.

In total, 327 anthrax cases in 2013 were detected. Among them 23 casee were reported from Shahjadpur, 77 from Tangail, 187 from Meherpur, and 40 from Chuadanga. In 2014, so far (up to 17 June) 114 anthrax cases have been detected. Among them, 13 cases were from Sirajganj, 93 from Meherpur, and 8 from Narayanganj.

Nipah virus infection

Nipah virus infection in humans is an emerging zoonotic disease in Bangladesh. First recognized in a large outbreak with 276 reported cases in Malaysia and Singapore (between September 1998 and May 1999), Bangladesh identified the first cases in 2001. Encephalitis and respiratory distress are common presenting symptoms and signs of Nipah infections. In India, two outbreaks in humans during 2001 and 2007 were reported from West Bengal. Bangladesh encountered 11 Nipah outbreaks between 2001 and 2012 in 20 districts, all occurring between December and May. The districts where the outbreaks occurred are Meherpur (2001), Naogaon (2003), Rajbari (2004), Faridpur (2004), Tangail (2005), Thakurgaon (2007), Kushtia (2007), Manikganj, Rajbari (2008), Faridpur (2010), Lalmonirhat (2011), and Joypurhat (2012). In all these outbreaks, a total of 215 human cases of Nipah infections in Bangladesh were recognized, with 164 deaths, indicating a very high case-fatality rate (76.3%). No major outbreak occurred in 2013 and in 2014 so far. However, small outbreaks occurred in Manjkganj, Magura, Faridpur, and Rangpur. Among the Bangladeshi patients, frequency of respiratory problems, including pneumonia, was more than among patients in Malaysia. This may be attributed to genetic diversity of the virus strains. Human-to-human transmission, rare earlier, was also noticed, probably due to more involvement of respiratory tract infections.

MERS-CoV and H7N9

Recently newly-emerged MERS-CoV outbreak in the Middle East and novel Influenza H7N9 outbreak in China are causing a growing public-health concern in our country. The IEDCR has started surveillance for those two newly-emerging diseases, using the platform of nationwide Influenza Surveillance in selected hospitals. The laboratory at IEDCR has the capability to detect these two viruses.

Rotavirus and intussusceptions

IEDCR, in collaboration with icddr,b, has started hospital-based Rotavirus and Intussusceptions Surveillance in three selected hospitals across the country from July 2012. The objectives of this surveillance are to estimate the proportion of diarrhea-related hospitalization among children aged less than 5 years, which are attributable to rotavirus, to describe the predominant strain of rotavirus throughout Bangladesh, to determine

the age, region and seasonal distribution of hospitalizations associated with rotavirus in the population under surveillance, and to estimate the frequency of hospitalization associated with intussusceptions among children less than 2 years of age in surveillance hospitals.

Chikungunya

Chikungunya fever, a dengue-like disease, is emerging alarmingly in the country in recent years. It is caused by an insectborne virus. In 2011 (August to October), suspected Chikungunya fever outbreaks were detected in Dohar upazila of Dhaka district and Shibganj upazila of Chapainowabganj district. Recently, two other outbreaks in Rajshahi and Pabna districts were identified. In no outbreak, case-fatality rate was reported other than persistent arthralgia causing patients' sufferings. Diagnosis of Chikungunya is important to distinguish from dengue. Chikungunya is caused by mosquitoes; so, reducing mosquito breeding is an important public-health measure to control the disease.

Diarrhea

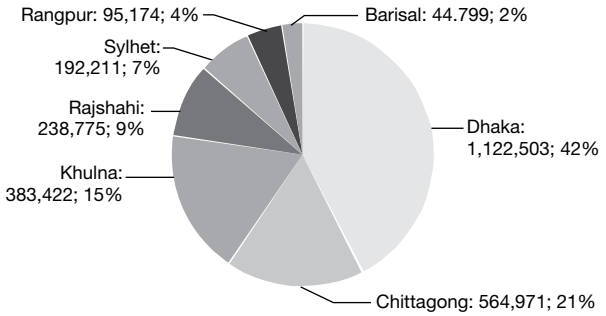


Figure 9.5 Distribution of reported diarrhea cases by division in 2013 (total cases: 2,641,855)

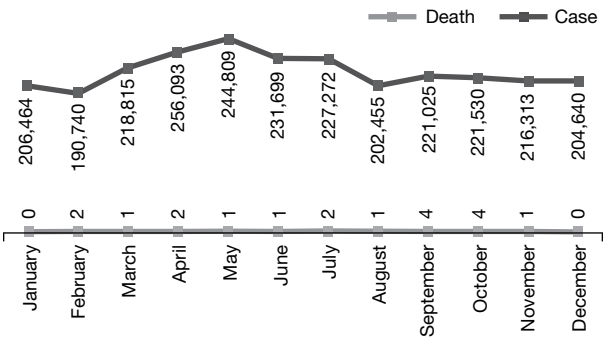


Figure 9.6. Number of diarrhea cases and deaths in 2013 by month (total cases 2,641,855; total deaths 19)

In 2013, report on 2,641,855 diarrhea cases and 19 deaths (0.0007% death rate) was received. Figure 9.5 shows the distribution of reported diarrhea cases in 2013 by division. The Dhaka division had the highest reported cases (n=1,122,503, 42%;), followed by Chittagong (n=564,971, 21%;) and Khulna (n=383,422, 15%;). Of the 19 reported diarrheal deaths, 8 were from Dhaka, 6 from Rangpur, 4 from Chittagong, and 1 from Barisal division.

Figure 9.6 shows the number of diarrhea cases and deaths in 2013 by month.

Avian and pandemic influenza

The population-size and density in Bangladesh encouraged proliferation of poultry industry, producing 220 million chickens and 37 million ducks annually. Poultry industry in the country is one of the largest in the world. Approximately 50% of the local-breed hens and ducks are raised in backyard farms, and another 50% comprise broilers and layers rared in commercial farms. The risk of avian influenza and other zoonotic diseases increases due to (i) high density of humans and animals; (ii) high number of backyard farms and live poultry markets; (iii) mixed farming practice with low biosecurity; (iv) limited control over poultry movements; (v) inadequate regulation of slaughtering and processing of animal products; and (vi) suboptimal veterinary public health infrastructure, surveillance systems, and laboratory facilities. External risk factors include: (i) long porous border (with significant cross-border movements of people and a lack of animal quarantine stations); (ii) importation of avian species, particularly breeder chickens; and (iii) regular movement of companion animals from overseas by expatriates. To contain the disease in poultry, awareness development, capacity–building in management, multi-sectoral coordination and cooperation, hygienic measures at commercial farms, backyard, and wet markets, surveillance and regulation of culling activities in livestock sector. So far, seven cases of human influenza infection (H5N1) have been identified in Bangladesh–the first in 2008, second and third in 2011, fourth, fifth, and sixth in 2012, and the seventh in 2013. Out of the seven cases, only one (the seventh) experienced death. Bangladesh developed modern diagnostic facility for pandemic influenza, with real-time polymerized chain reaction (RT-PCR) and biosafety level 3 (BSL 3) laboratory. The country reports to WHO on any event of avian influenza, following the guidelines of International Health Regulation 2005 (IHR 2005). An Avian and Pandemic Influenza Ward at Asthma Center of National Institute of Diseases of Chest and Hospital (NIDCH), Dhaka,

with support from WHO and isolation units in 64 district hospitals have been established. There is a national guideline to operate the isolation units both when human pandemic avian influenza or other pandemic influenza case is detected. When there will be no such cases, the units are specified to use for other infectious diseases, like Nipah virus infection, meningitis, diphtheria, encephalitis, etc. The Infectious Disease Hospital (IDH) at Mohakhali, Dhaka, has been also made ready for the management of pandemic influenza patients if needed. In such cases, the provision has been made to open separate outdoor and indoor facilities in medical college hospitals and also in district and upazila hospitals. In all hospitals having more than 200-bed capacity, there is an instruction to create pandemic influenza management committee.

Tuberculosis

According to the revised estimates by WHO, the incidence and prevalence rates of all forms of tuberculosis in 2012 were 225 and 434 per 100,000 population respectively. It is further estimated that about 45 per 100,000 people died of TB in the same year. Although the HIV prevalence is still low, HIV poses a threat to TB control. The estimated incidence rate of HIV-positive TB cases reduced from 0.40/100,000 population in 2011 to 0.16/100,000 in 2012. The proportion of multidrug-resistant tuberculosis (MDR-TB) among new TB cases was 1.4%, and that among re-treatment cases was 29%.

Progress in TB control

Since the introduction of DOTS[1] in Bangladesh in 1993, remarkable progress in TB control has been made in terms of DOTS coverage, detection of TB cases, and treatment success.

DOTS coverage refers to the population living in areas where DOTS services are available; this does not mean that all people have equal access to diagnostic and/or treatment facilities of all upazilas. As achieved by June 1998 and by 2007, NTP reached 100% DOTS coverage.

A total of 190,8893 cases (including 6,386 combined cases of return after failure, return after default, and others) have been reported to NTP in 2013. So, the overall case notification rate, excluding those 6,386 cases was 119 per 100,000 population. The case notification rate for new smear-positives cases in 2013 was 68 per 100,000 population. (Figure 9.7 and 9.8)

Multidrug-resistant tuberculosis (MDR-TB) in Bangladesh

The emergence of resistance to anti-TB drugs, particularly the multidrug-resistant tuberculosis (MDR-TB), has become a significant public-health threat globally against effective TB control. There were an estimated 450 000 (range: 300,000–600,000) new cases of MDR-TB worldwide in 2012. Globally, an estimated 3.6% of new cases and 20.2% of previously treated cases have MDR-TB.

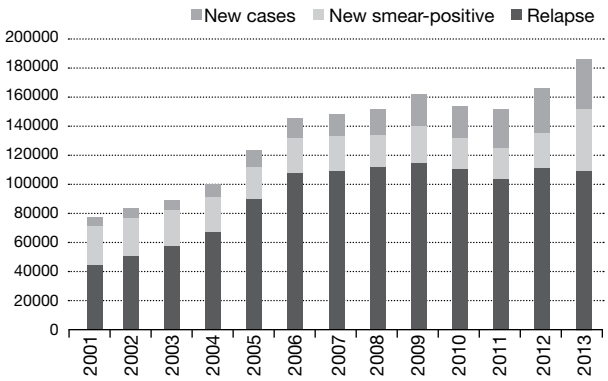


Figure 9.7. Nationwide tuberculosis case notification; absolute number; 2001-2013

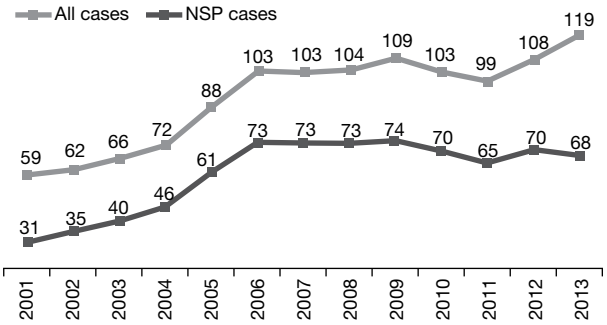


Figure 9.8. Nationwide tuberculosis case notification rate (per 100,000 population/year), 2001-2013

For diagnosis and management of MDR-TB, a National TB Reference Laboratory (NTRL) has been established in National Institute of Diseases of Chest and Hospital (NIDCH), Dhaka. The

[1] DOTS: Acronym for Directly-observed Treatment, Short-course; this has evolved as a brand name for the TB control strategy with the following five components: (1) political commitment with increased and sustained financing; (2) case detection through quality-assured bacteriology; (3) standardized treatment with supervision and patient support; (4) an effective drug supply and management system; and (5) monitoring and evaluation system, and impact measurement

NTRL started functioning since 27 June 2007 for culture and drug sensitivity test (DST). It is linked with supranational reference laboratory (SRL) in Antwerp, Belgium. In August 2008, NIDCH started enrolment of MDRTB patients with GLC-approved 24 months regimen and supported by the Global fund. By end of December 2013, a total of 1,301 MDR-TB patients have been enrolled. Treatment success rate of MDR TB patients (2011 cohort) enrolled in NIDCH is 68%.The MDR-TB patients are also managed in the Chest Disease Hospital (CDH) of Rajshahi division but with a shorter regimen of 9 months and supported by Damien Foundation, Bangladesh. Since May 2005 this centre has been managing MDR-TB patients and, by end of December 2013, a total of 1,159 MDR-TB patients have been enrolled. Treatment success rate of MDR patients under 9 months regimen (2011 cohort) is 74%. A regional TB reference laboratory (RTRL) has been established in the CDH, Rajshahi in May 2008. Another RTRL has been established in CDH, Chittagong. As on December 2013 a total of 247 MDR-TB patients have been enrolled in CDH, Chittagong. CDH (20-bedded) in Pabna has started managing MDR-TB patients and, during 2013, enrolled 31 patients.

Public-Private Mix (PPM) Strategy for TB Control in Bangladesh

Public-Private Mix is a strategy which aims to link the resources of public and private healthcare providers to achieve national TB control targets. The PPM approaches for TB control in Bangladesh involve partnership of public with private, public with public and private with private healthcare providers. Private care providers for TB have important and strategic roles in reaching groups of the population, particularly those who bypass the public healthcare delivery system. So, NTP has expanded its collaboration with public and private healthcare providers. NTP has already developed effective collaboration with the health authorities of city corporations to mobilize the staff of the city corporations in six metropolitan areas in the TB control program. NTP has established the Memorandum of Understanding (MOU) with BGMEA in 2008 to provide TB control services program in garments industries throughout Bangladesh. At present, NTP established DOTS centers in public and private health facilities, such as medical college hospitals (both public and private), Sadar (district) hospitals, chest disease hospitals and clinics, NGO hospitals, city corporation hospitals, defense hospitals, and prison hospitals, with support from partner NGOS. NTP has also made MOU with BKMEA in 2013 to provide TB control services program in knitting industries.

Leprosy

Bangladesh has achieved elimination of leprosy as a public-health problem at the national level at the end of December 1998. It was 2 years ahead of WHO-targeted date. The elimination is defined by the WHO to reduce registered prevalence to less than 1 case per 10,000 population. At that time, the registered prevalence was 0.87/10,000 population, and the number of endemic districts/areas were 15. After achieving elimination at the national level the National Leprosy Elimination Program (NLEP) is consolidating its effort to achieve subnational (district-level) elimination. At the end of December 2004, the registered prevalence came down to 0.51/10,000 population, and the number of endemic districts/areas came down to 10. The NLEP has been experiencing a very slow decline of leprosy

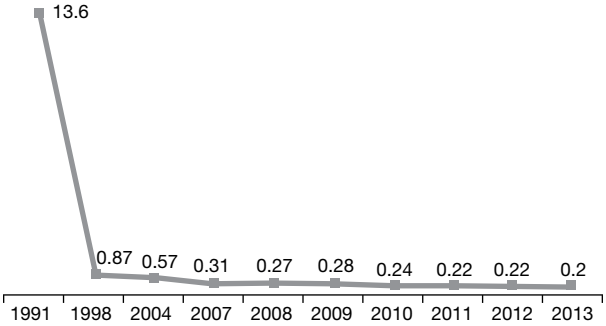


Figure 9.9. Registered prevalence rate of leprosy (per 10,000 population), Bangladesh, 1991-2013

prevalence since the last 8 years with 0.0.20/10,000 population at the end of December 2013. (Figure 9.9)

At the end of 2013, the number of endemic district remain one, and it is Gaibandha, and the prevalence rate reduced from 1.39/10,000 population in 2012 to 1.15/10,000 population in 2013. Another important indicator for evaluating leprosy program is the disability grade 2 rate among newly-detected cases per year, which was 21.4% in 1993, the year of launching the revised National Leprosy Elimination Program (NLEP). Though the target is to reduce deformity grade 2 to less than 5%, it is still remaining high at 11.06%. However, it is slightly less than the previous year (11.5% at the end of 2012)

HIV/AIDS

Bangladesh is still considered a low-prevalence country for HIV/AIDS but the country remains extremely vulnerable to HIV epidemic because of the high prevalence in neighboring countries and the high mobility of people inside the country and beyond. Inadequacy in correct knowledge about HIV and AIDS due to illiteracy and ignorance and gender inequity aggravate this vulnerability. High

rate of needle-sharing among injecting drug-users (IDUs) and low rate of condom-use and high prevalence of STIs among the most-at-risk population are the most important factors that may contribute to a potential HIV epidemic. The Government of Bangladesh has been undertaking precautionary measures to limit the spread of HIV infection since the detection of the first HIV-positive case in 1989. National AIDS Committee (NAC) was formed in 1985 and reconstituted in 2010. The MOHFW is playing the leading role in the prevention of HIV and AIDS. The National AIDS/STD Program (NASP) is implementing HIV and AIDS prevention activities in Bangladesh through a coalition of three functionaries, namely National AIDS Committee (NAC), MOHFW, and DGHS. The NASP is one of the wings of DGHS responsible for coordinating activities of all stakeholders and development partners involved in the HIV and AIDS program. As of December 2013, a total of 3,241 HIV+ve cases have been identified. Among them, 1,299 developed AIDS; among the latter group, 472 had died. Although HIV prevalence among the general population as well as among the most-at-risk population remains at a very low level, the UNAIDS and WHO (2012) estimate that there may be about 8,000 persons living with HIV as of 2012. Figure 9.10 shows the year-wise cumulative number of HIV+ve cases, AIDS patients, and AIDS-related deaths in Bangladesh.

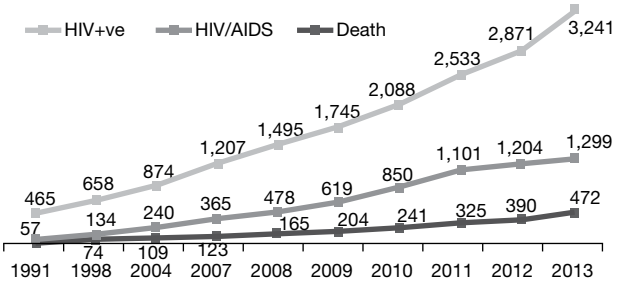


Figure 9.10. Cumulative number of HIV+ve cases, AIDS patients, and AIDS deaths by year in Bangladesh (2004-2013)

Figure 9.11 shows the number of new AIDS cases from 1990 to 2013, revealing drastic reduction in the number of new AIDS cases in 2013.

The National AIDS/STD Program introduced a surveillance system since 1998 using facility-based data from HIV/AIDS and STD service providers. The most-at-risk populations, includeing female and male sex workers (FSW and MSW), men who have sex with men (MSM), transgendered people (Hijra), and people who inject drugs (PWID) are covered in the surveillance. The 9th round of serological surveillance (2011) was conducted in populations most-at-risk of HIV, i.e. sex workers, PWID, heroin-smokers, combined PWID and heroin-smokers, MSM, and Hijra. This round was conducted during December 2010 to June 2011; 12,894 individuals were sampled from 36 geographical areas of Bangladesh. The overall prevalence of HIV and active syphilis was found to be 0.7% and 3.0% respectively. The population group with the highest rate of HIV continues to be PWID in Dhaka but the prevalence declined to 5.3% from 7% (in the 8th round). However, the decline is not statistically significant. Fortunately, the localization of the PWID epidemic to one neighborhood of Dhaka observed in previous years has also remained static. HIV was also detected in another four groups of people who use drugs (PWUD), e.g. male PWID from Narayanganj (1.5%) and Satkhira (0.4); combined female PWID and heroin-smokers from Dhaka, Narayanganj, Tongi (1.2%), and Benapole (1%). Active syphilis rate at >5% was detected among six groups of PWUD, and the highest proportion was found in male PWID in Narsingdi (7.9%), followed by PWID in Chandpur (6.1%) and female PWUD in Dhaka, Tongi, and Narayanganj (5.9%). High prevalence of active syphilis indicates practice of unsafe sex. Antibodies to hepatitis C

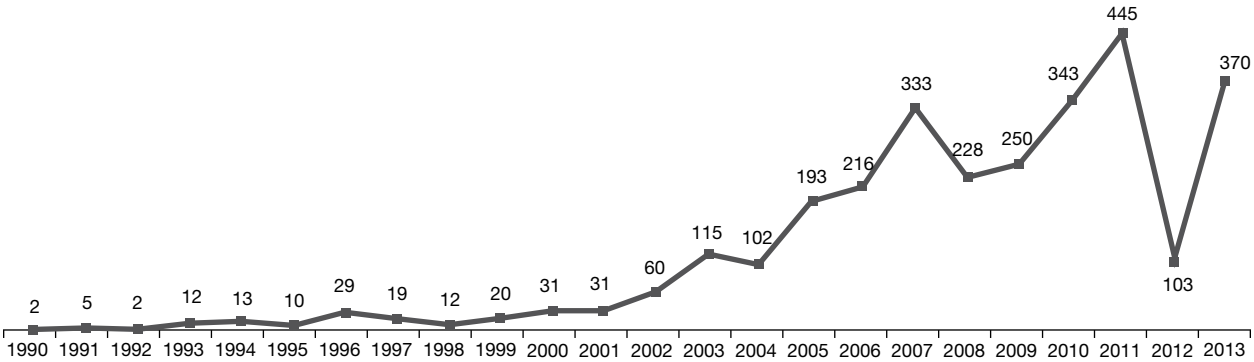


Figure 9.11. Number of new AIDS cases from 1990 to 2013 in Bangladesh

virus (HCV) were measured in all PWID and groups of combined PWID and heroin-smokers but not in the groups consisting of only heroin-smokers. The rates varied in different cities, and in six cities, HCV-positive cases were found to be >50% (Rangpur was included in Rajshahi). The higher prevalence of HCV was found among PWID from several towns of Rajshahi division, with Kanshat having the highest prevalence (95.7%). In Dhaka, HCV rates have declined significantly ($p<0.05$) over the rounds of the surveillance. A total of 3,568 female sex workers were sampled from 13 areas of Bangladesh. Overall, HIV prevalence was low (<1%) in all groups of female sex workers, except in casual sex workers from Hili where two in 125 samples were positive (1.6%). Active syphilis rates at >5% was detected in three groups and sites–street-based sex workers of Hili (12.5%) and Chittagong (10.3%) and hotel-based sex workers of Sylhet (9.3%). Male sex workers (MSW) and MSM continue to have low levels of HIV and active syphilis. Approximately 1% of Hijra had HIV. Among the group of MSM, MSW, and Hijra, active syphilis rates were the highest in Hijra of Dhaka and Manikganj (6.1%). High rates of active syphilis highlight the need for intensification of ongoing HIV/STI prevention programs in these population groups and sites. In this round of surveillance, more population groups were sampled from border towns, and Benapole was included for the first time. Male PWID, street-based female sex workers, combined MSM/MSW and Hijra of Hili, combined group of male and female PWID and heroin-smokers of Benapole, casual female sex workers of Burimari, combined group of hotel- and residence-based female sex workers of Teknaf were sampled. However, for all these groups, the sample-size was small. HIV was detected in two groups in Hili and Benapole each but the numbers were small. Cross-border mobility was more commonly reported by respondents in Hili. Figure 9.12 shows the trend in HIV prevalence among the most-at-risk population.

The National AIDS/STD Program carries out annual case reporting. The 2012 report of the Program has made an occupational distribution of the new cases of HIV infections. The summary is provided in the annex. It is seen that, among the new cases of HIV infections, 63.0% are male, 34.9% are female, and 2.1% are transgendered population. Good progress has been made to increase the coverage of antiretroviral drugs (ARVs) for people living with HIV. Supported by the Global Fund and USAID, the current coverage is 100% for brothel-based sex workers, >60% for street-based sex workers, >45% for hotel- and residence-based sex workers, >25% for MSM, >80% for Hijra, and >75% for people who inject drugs.

Relevant department of DGHS has provided strong leadership and also introduced innovative and diverse approaches to containing the burden of communicable diseases.

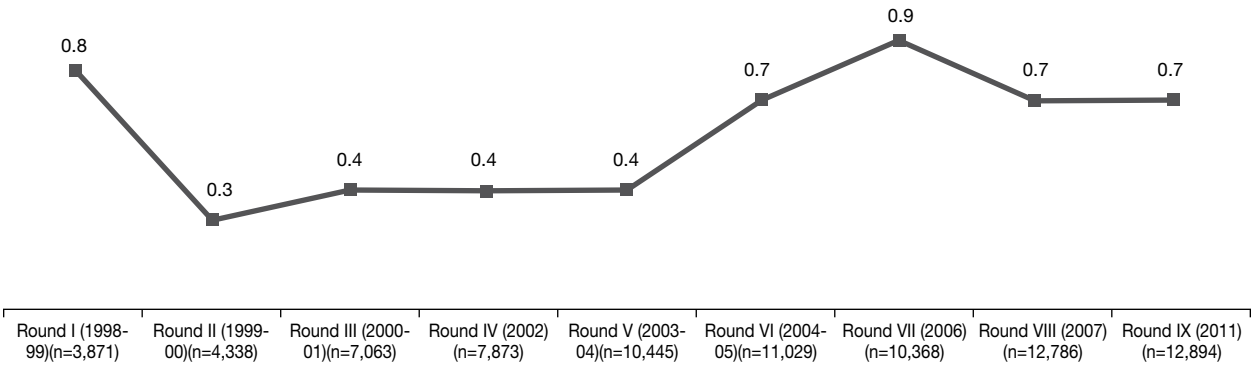


Figure 9.12. Prevalence (%) of HIV infections among most-at-risk population in different rounds of HIV sero-surveillance of Bangladesh

CHAPTER 10

PREPAREDNESS AND RESPONSE IN HEALTH EMERGENCIES

Efficient responses saving more lives, even with resource constraints

Natural calamities are common in Bangladesh. Mass health emergencies, principally due to geographical location and topographical feature, natural calamities, like cyclone, floods, and tornado, etc. occur in Bangladesh almost as an annual phenomenon. The country is also vulnerable to earthquake. Bangladesh is the most densely-populated country in the world. This creates vulnerability of more victims to road, rail and river traffic accidents. The overall disaster situation of the country causes high burden of disaster-related diseases, disabilities, and deaths. Skilled manpower, uninterrupted supply of logistics, and availability of guidelines for the best public health practices at adequate level are required to reduce the adverse health impact of these disasters to a great extent.

The health emergency preparedness and response program is active in DGHS, which focuses on adequate disaster preparedness and quick response. Two programs work in collaboration. One is the National Health Crisis Management Center and Control Room (NHCMC&CR) of DGHS supported under the HPNSDP 2011-2016, and the other one is the WHO-supported Emergency Preparedness and Response (EPR).

The NHCMC&CR operates round-the-clock all seven days a week to receive reports of any health emergency relating to disaster or accident. Some of the recent experiences will clarify how it works. A devastating tornado ripped through more than a dozen of rural villages in the Brahmanbaria district of Bangladesh, affecting seven unions of three upazilas (subdistricts) in the evening of Friday, 22 March 2013. The tornado claimed 37 lives and injured 971 persons. The NHCMC&CR immediately started coordination and mobilization of local medical teams to start rescue operations and medical relief program. A team of NHCM&CR rushed to the area and took notes on deaths and injured persons and visited admitted patients in Brahmanbaria Sadar Hospital and in Akhaura and Cosba Upazila Health Complexes. Local health authorities and medical teams were given guidance on taking adequate care of patients. Subsequently, NHCM&CR maintained contacts with the district health manager's office regularly and communicated the information to the higher authority and policy-makers. The NHCM&CR coordinated the activities relating to management of buffer stocks of emergency drugs and logistics and ensured replacement at the quickest possible time.

The NHCMC&CR operates round-the-clock all seven days a week to receive reports of any health emergency relating to disaster or accident ...

On 24 April 2013, one of the greatest tragedies in the history of Bangladesh occurred. A nine-storied building called 'Rana Plaza' located in peri-urban Dhaka (Savar area) collapsed. The building housed five garment factories, a shopping complex, and branch of a bank. Many garment workers died immediately, others were injured, and many more were trapped inside the collapsed building. The number of dead bodies found was 1,132, and 2,755 injured persons were registered. The NHCM&CR received information immediately from the local authority and categorized it as a high-priority national health emergency. So, the Director General of Health Services, the Minister for Health, the Secretary to the MOHFW, and all other allied directors and departments, including local hospitals and clinics, were immediately informed. A rapid response team rushed to the site of incidence and started coordinating and organizing medical rescue operations, resuscitation, first-aid, and transfer of injured persons to appropriate hospitals. Ten ambulances were engaged for transportation of injured persons. Communication and coordination with armed forces, fire brigade, disaster management bureau, WHO, UN agencies, development partners, and relevant NGOs were

established. Government provided all the medicines and logistics support to all hospitals, public or private, for treatment of the admitted victims. Many victims suffered serious limb, bone, kidney and other internal injuries. Some of them are still in the hospitals. The NHCM&CR maintained tracking activities several months after the incidence for follow-up of these patients, coordinating their treatment, and communicating the reports to the higher authority and policy-makers.

in the morning of 16 May 2013, a warning came from the meteorological department that a cyclone called Mohasen was about to hit the coastal belt of Bangladesh. This was also a high-priority national emergency. Considering the possible health implications, the NHCMC&CR communicated the information to the Director General of Health Services, Honorable Health Minister, and Health Secretary as well as to the local health facilities in the coastal area. Medical teams, buffer stocks of medicines and logistics, and community awareness measures to minimize morbidity and mortality were mobilized. However, cyclone Mohasen was weakened during its long travel and hit Patuakhali, Pirojpur, and Barguna coastal districts of Barisal division. There were 16 deaths and 81 injuries. Although it was not required to make fully functional, the NHCMC&CR activated 1,327 government medical teams to provide post-cyclone medical operations.

The EPR program of DGHS is supported by the WHO. The regular activities include capacity-building of the health managers and raising awareness of community people. The program activities operate round-the-clock all seven days a week during emergencies. The program's primary goal is to reduce avoidable and preventable morbidities, disabilities, and deaths during emergencies through strengthening overall capacity of the health sector to prevent and mitigate the adverse health consequences of emergencies and disasters. During the normal period, it develops plans, policies, guidelines, lEC materials (viz., training modules, leaflets, posters, etc.), collects disaster-related information, and conducts other coordination function with the NHCMC&CR and other government and NGO stakeholders.

The EPR has a number of institutional capacity-building activities, such as formation and training of "Disaster Health Management Committees" at all levels; conducting training of trainers (TOT)/ workshop/mock drills/simulation exercises on search, rescue, evacuation, first-aid, psychosocial support, risk communication, and mass casualty management for health professionals and workers; provision of emergency supplies (first-aid kits, rain-coats, umbrellas, solar lamps, safety rubber boots, jackets, caps, whistles, etc.) for the first-level health responders; and provision of emergency drugs (maintaining buffer stock) and medical equipment/supplies. During the crises, strategic priority functions are undertaken. These are: (i) Assessment and monitoring; (ii) Critical gap-filling; (iii) Coordination through cluster approach; and (iv) Capacity-building during emergency.

For assessment and monitoring, a team is formed and sent immediately to the affected areas as and when an emergency situation arises after cyclones, floods, earthquakes, etc. The team measures the health status of the victims and promptly makes an assessment of their needs, identifying priority actions to address the health problems and avert deaths.

For critical gap-filling, the EPR program ensures that critical gaps in health responses are rapidly identified and filled based on the needs assessment report and available resources.

For coordination through cluster approach, the emergency situations are assessed by conducting cluster meetings participated by invited humanitarian actors for joint planning and joint response and actions. The participants with multi-disciplinary knowledge and experience share the observations and identify the under-served or over-served areas. All participants are made aware about "who does what and where" to ensure a holistic collaborative effort.

For capacity-building during emergency, DGHS, on an urgent basis, conducts some sessions of relevant training for the health managers on "how to manage and overcome ongoing devastating situation." Providing training to staff and the local people in the community is helpful in identifying a sustainable strategy to be adopted in future emergencies both for public health interventions and related areas, e.g. water quality surveillance, mental health counseling, and so on.

For efficient and effective management of health-related problems originated from the disasters, the concerned department of DGHS has formed the Disaster Health Management Committee at all levels of health facilities; 2,562 trained doctors, along with paramedics, 28,483 other health and family planning workers, and 5,940 volunteers at the union level were recruited. A well-developed buffer stock system is working for making logistics available. Current buffer stock position has been reported from every upazila health complex and civil surgeons' offices every month.

All activities of the EPR program are supported by the Emergency and Humanitarian Action (EHA) program of the WHO and other health cluster members ...

There are 7 divisional health management committees, with 50 trained staff, 63 district committees, 880 trained staff, 9 medical college-level committees, and 407 upazila health complex-level committees having 31,045 trained staff.

All these activities of the EPR program are supported by the Emergency and Humanitarian Action (EHA) program of the WHO and other health cluster members. In addition to the Government and other organizations, CDMP, and European Union Narre consortium also provide technical and logistic support to the program for strengthening disease surveillance and emergency supplies, like drugs for replenishing buffer stocks, medicines, laboratory reagents, and related goods for proper investigation and case management. The EPR is part of a strong coordinated response to emergencies, along with DGHS, armed forces, UN agencies, fire brigade, Red Cross, development partners, and NGOs. Table 10 shows some recent capacity-building activities carried out by the EPR program from January 2012 to June 2013.

Some identified challenges include (i) replenishment of buffer stocks at regular intervals; (ii) full functioning of Emergency Medical Services (EMS); (iii) achievement of 12 SEARO-EHA benchmarks; and (iv) adequate coordination among concerned agencies.

The EPR program plans, in future, to: (i) prepare comprehensive national disaster management plan for the health sector; (ii) operationalize the national disaster management institute in the health sector; (iii) strengthen National Crisis Management Center and Control Room; and (iv) procure make-shift hospitals and river ambulances.

Bangladesh is the world's worst victim of climate change and the most densely-populated country. There are obvious resource constraints. However, the use of experience to guide emergency preparedness for health helped the health authority to ensure better response. Statistics of some notable disasters of the previous year are given in the annex.

Bangladesh is the world's worst victim of climate change and the most densely-populated country. Yet, preparedness to handle post-disaster situations is praiseworthy ...

Table 10. Number of training program held with support from WHO from January 2012 to June 2013

Activity	No. of training sessions held	No. of participants
Workshop on comprehensive health-sector emergency preparedness and response for health and disaster management professionals	7	245
Training on public-health risks and interventions in emergencies for health professionals	6	210
Training on prevention and control of post-disaster communicable diseases for health professionals	4	140
Health cluster meeting	6	180
Training on risk communication for health professionals	2	74
TOT on emergency medical services for master trainers	3	110
Training on search, rescue, and evacuation for community-level health workers	3	105
Advanced training on psychosocial health for health professionals	2	68

CHAPTER 11

NON-COMMUNICABLE DISEASES

An emerging priority area in health management

The middle-aged and the elderly populations comprise the group most affected by non-communicable diseases (NCDs) in Bangladesh. NCDs occupy a major share of the disease burden and mortality in the country. Factors responsible for non-communicable diseases include changing dietary habits and lifestyle, rapid urbanization, growth of commuting, tobacco-use, uncontrolled growth, and consumption of processed foods and beverages, indoor air pollution, road-traffic injuries, lack of awareness about healthful behavioral patterns, and psychological pressure. In the current Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016, control of non-communicable diseases was given one of the topmost priorities. The NCD operational plan categorized NCDs into two major groups, viz. conventional and non-conventional NCDs. The conventional group includes major NCDs, like cardiovascular diseases (CVDs), peripheral vascular diseases (PVDs), cerebrovascular disease (stroke), cancer, diabetes, chronic obstructive pulmonary diseases (COPDs), arsenicosis, renal diseases, deafness, osteoporosis, congenital anomalies, oral health, and thalassemia. The non-conventional group includes issues, like road safety and traffic injury prevention; child injury (including drowning); sports injury; snake-bite; suicide and related injury; violence against women; acid burn; occupational health and safety; industrial and agricultural health hazards; strengthening Institute of Public Health (IPH); climate change; air pollution; water, sanitation and other environmental health issues; emergency preparedness and response; post-disaster health management and emergency medical services; mental health; autism; tobacco, alcohol and substance-abuse, etc.

The national NCD risk factor survey (2010) revealed some critical facts, such as (i) NCDs may account for 61% of the total disease burden; (ii) among the sampled adult population (15+ years), 97% had at least one risk factor, half of whom had two risk factors; (iii) the country has 40 million adult smokers and smokeless tobacco-users; (iv) 64.5 million people are not taking adequate fruits and vegetables; (v) 17 million people are not doing adequate physical activity; (vi) 18% adults have hypertension; and (vii) 4% have self-reported documented diabetes.

Given the above NCD situation in the country, summary of data gathered from different specialized hospitals is presented below to understand the volume of patient-loads these hospitals are dealing with.

National Institute of Cardiovascular Diseases

Figure 11.1 shows the number of outdoor visits and admissions in the National Institute of Cardiovascular Diseases (NICDV) in the last five years (2008-2013). More detailed information from 2002 to 2013, with male, female and child disaggregation, including average daily outdoor visits and admissions, average length of stay, and bed-occupancy rate, is provided in the annex.

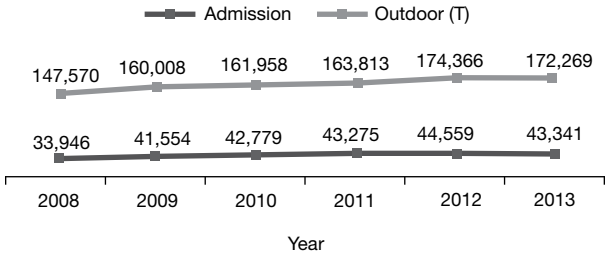


Figure 11.1 Number of outdoor visits and admissions in NICVD (2008-2013)

In 2013, a total of 2,056 exercise tolerance tests (ETTs) were done in the Institute; the recipients of services included 81.9% males (n=1,684) and 18.09% females (n=372). Detailed data on ETTs from 2001 to 2013 are provided in the annex. In 2013, 139 myocardial perfusion imaging was done. More data on myocardial perfusion imaging from 2003 to 2013 are provided in the annex.

Table 11.1 shows the number of cath lab procedures done in NICVD in 2013. In total, 4,239 coronary angiography, 240 cardiac cath, 155 angiography, 17 angioplasty, and 3,464 other

Table 11.1. Number of cath lab procedures performed in NICVD in 2013

Coronary angiography	Cardiac cath	Angiography	Angioplasty	Other interventions						
				PCI	PTMC	TPM	PPM	EPS&RFA	Other	Total
4239	240	155	17	1828	137	910	439	57	93	3464

Table 11.2. Heart and vascular surgeries performed in NICVD in 2013

Open-heart surgery					Closed-heart surgery	Vascular surgery		
CABG	Valve	Congenital	Other	Total		Routine	Emergency	Total
147	293	450	26	916	41	265	1214	1479

procedures were done. Detailed data on the various cath lab procedures done in the Institute from 2003 to 2013 are given in the annex.

Table 11.2 shows the number of heart and vascular surgeries done in the NICVD in 2013. These included a total of 916 open-heart surgeries, 41 closed-heart surgeries, and 1,479 vascular surgeries. Detailed data on heart and vascular surgeries from 2002 to 2013 are provided in the annex.

National Center for Control of Rheumatic Fever and Heart Diseases

The National Center for Control of Rheumatic Fever and Heart Diseases (NCCRFHD) takes care of the patients suffering from rheumatic heart diseases and related conditions. There were 28,380 outdoor visits in 2013, with 10,906 (38.43%) males and 17,474 (61.37%) females. Out of all these 28,380 patients, 14,120 (49.7%) were new and 15,853 (57.7%) were old patients. A detailed age- and sex-disaggregation by monthly outdoor attendance of patients is shown in the annex. Figure 11.2 shows the monthly distribution of the number of prophylactic antibiotic injections (n=7,120) given, ECGs (n=1,493), and echocardiograms (1,215) done on patients at the NCCRFHD in 2013.

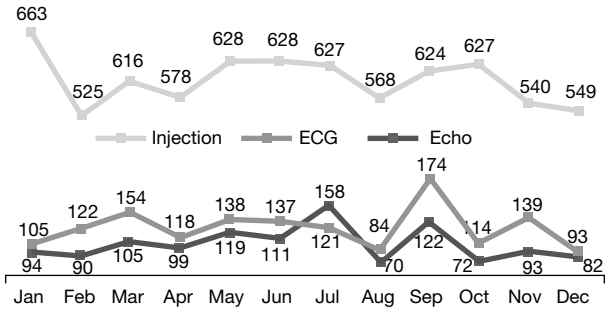


Figure 11.2. Monthly distribution of number of prophylactic antibiotic injections (n=8,057) given, ECGs (n=1,493) and echocardiograms (1,215) done on patients at NCCRFHD in 2013

National Institute of Kidney Diseases & Urology

National Institute of Kidney Diseases & Urology (NIKDU) is a specialized postgraduate institute and training center. It offers postgraduate courses, like MD (Nephrology), MD (Pediatric Nephrology), and MS (Urology) and provides postgraduate training on nephrology, urology, pediatric nephrology, radiology and imaging, biochemistry, histopathology, microbiology, immunology, hematology, and anesthesiology. Figure 11.3 shows the number of outdoor and indoor patients treated in this institute from 2009 to 2013. Detailed disaggregated data on male, female, and children, including old and new patients, is provided in the annex.

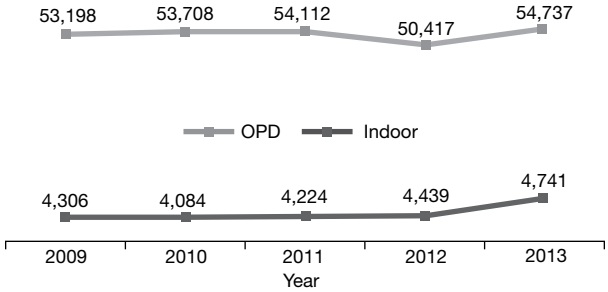


Figure 11.3. Number of outdoor and indoor patients at the National institute of Kidney Diseases & Urology (NIKDU) from 2009 to 2013

National Institute of Cancer Research & Hospital

National Institute of Cancer Research & Hospital (NICRH) is the country's only state-owned tertiary-level institute involved in cancer treatment and research. It offers wide range of cancer-related services at low or free of cost. There are 23 fully active departments at NICRH. They are always trying to cover every aspect of cancer management from prevention to cure, from diagnosis to research and from surgery to rehabilitation. In 2013, NICRH provided services to 163,029 outdoor, 3,720 emergency and 3,045 indoor patients. Table 11.3 and 11.4 show the OPD and emergency visits, admissions and deaths at NICRH in the last three years.

Table 11.5 presents distribution of cancer patients by age-group. These data were extracted from draft Cancer Registry Report of 2013. Majority of the patients were from 45-54 years age-group (31.8%). The second leading age group was 55-64 years (16.1%).

Table 11.3. No. of OPD and emergency visits at NICRH in last three years (2011-2013)

Year	OPD				Emergency			
	T (M+F)	M	F	Child (U-5)	T (M+F)	M	F	Child (U-5)
2011	41064	16978	22362	1724	3869	2418	1289	162
2012	59221	33073	26148	1803	3606	2305	1301	177
2013	163029	81753	81276	2425	3720	2220	1500	107

Table 11.4. No. of admissions and deaths at NICRH in the last three years (2011-2013)

Year	OPD				Emergency			
	T (M+F)	M	F	Child (U-5)	T (M+F)	M	F	Child (U-5)
2011	3498	1722	1275	501	92	49	35	8
2012	3020	1731	1289	481	60	45	15	5
2013	3045	1820	1225	577	115	67	48	3

Table 11.5. Distribution of cancer patients by age-group in 2013

Age-group (years)	Frequency	%
≤14	526	3.4
15-24	616	4.0
25-34	1182	7.7
35-44	2362	15.4
45-54	4892	31.8
55-64	2470	16.1
65-74	2342	15.2
75-84	739	4.8
85-94	197	1.3
≥95	49	0.3
Total	15375	100.0

Table 11.6. Distribution of admitted cancer patients by various departments (2013)

Department	Frequency	%
Medical Oncology	526	3.4
Pediatric Oncology	616	4.0
Surgical Oncology	1182	7.7
Radiation Oncology	2362	15.4
Gynecological Oncology	4892	31.8
Hematology	2470	16.1
Genito-urinary Surgical Oncology	2342	15.2
ENT Oncology	739	4.8
Plastic and Reconstructive Surgical Oncology	197	1.3
Dental and Faciomaxillary Surgical Oncology	49	0.3
Total	15375	100.0

Table 11.6 shows the distribution of admitted cancer patients by various departments in 2013. As before, majority (39.4%) of the patients were admitted to the Medical Oncology department, followed by Pediatric Oncology (15.0%), Surgical Oncology (13.7%), Radiation Oncology (12.2%) and Gynecological Oncology (4.9%).

Table 11.7 shows the top five cancers among males and females. In males (n=8,021), lung cancer topped the list (25.0%). Lymphoma (11.7%) took the second position. Esophageal cancer (6.9%), stomach cancer (5.5%), and liver cancer (4.5%) occupied the next successive places. Among the females (n=7,354), breast cancer (26.1%) was the leading cancer, followed by cervical cancer (19.2%), lung cancer (6.6%), lymphoma (6.1%), and esophageal cancer (4.3%).

National Institute of Mental Health & Research

In 2013, the National Institute of Mental Health & Research (NIMHR) provided services to 24,976 new outdoor patients; 2,103 emergency patients and 2,140 indoor patients. Among the outdoor patients, 13,382 (53.57%) were males; 8,814(35.28%) were females, and 2,780(11.13%) children. Among the emergency patients, 1,302(61.91%) were males, 731(34.75%) were females, and 70(3.32%) were children. Among the indoor patients, total 1,320 (61.68%) were males, 744(34.76%) were females and 76(3.55%) were children. A detailed profile of patients from 2008 to 2013 is given in the annex.

Figure 11.4 shows the percentage distribution of the admitted patients in NIMHR in 2013. Manic

Table 11.7. Distribution of patients by top five types of cancers in 2013

Male			Female		
Type of cancer	No.	%	Type of cancer	No.	%
Lung	2006	25.0	Breast	1917	26.1
Lymphoma	940	11.7	Cervix	1412	19.2
Esophagus	554	6.9	Lung	481	6.5
Stomach	442	5.5	Lymphoma	439	6.0
Liver	359	4.5	Esophagus	311	4.2

episodes (39.81%) and schizophrenia (34.86%) accounted for 74.67% of the total admitted patients.

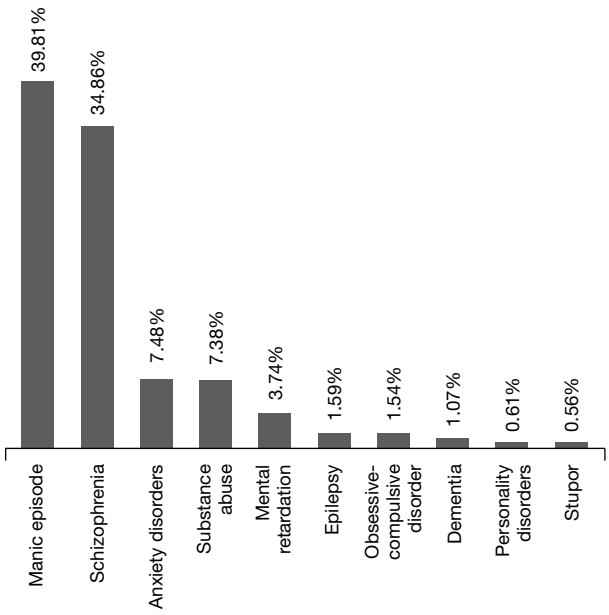


Figure 11.4. Distribution of the admitted patients in NIMHR in 2013 by descending order

Arsenic in groundwater: Mitigation program of DGHS

The presence of arsenic in harmful level (unsuitable for human consumption) was first detected in 1993 by the Department of Public Health Engineering (DPHE) in 4 tubewells of Chamagram village of Chapainowababganj Sadar upazilla, According to a report published by the National Arsenic Mitigation Center in 2003, water-samples from 4.95 million tubewells were tested for the presence of arsenic. Of these, 1.44 million (29.1%) showed the evidence of arsenic contamination. The DPHE reported in 2006 that arsenic contamination in tubewell water was present in 62 of the 64 districts of Bangladesh. The first detection of health problems in 8 persons due to drinking of arsenic-contaminated water was recorded in 1994 by the Department of Occupational and Environment Health (OHE) of the National Institute of Preventive and Social Medicine (NIPSOM). Since then, the National Arsenic Program of the Directorate General of Health Services has been conducting several key activities, viz. (i) consultations and workshops for the development of methodology, tools, database, and data sources; (ii) orientation training of government and non-government health service providers, like nurses, medical assistants, technologists, and field-level health and family planning workers; (iii) mass awareness programs on consumption of arsenic-free safe drinking-water; (iv) testing tubewells water at health facilities for prevention of arsenicosis; (vi) screening of patients through house-to-house searching programs; (vii) identification, diagnosis, and management of arsenicosis patients; (viii) capacity-building of human resources and improving facilities for effective case management and referral; (ix) establishment of rehabilitation centers for disabled arsenicosis patients; (x) conducting surveys and research on arsenicosis; (xi) updating national arsenic mitigation policy and strategy; (xii) strategic partnership with local bodies and community-based organization regarding the mitigation of arsenicosis; (xiii) further collaboration between DGHS and DPHE at the field level to strengthen water screening at the community level; (xiv) strengthening of the existing BAN-net and InfoBase and further inclusion of electronic database at the DGHS (logistics, human resource, and IT network); and (xv) strengthening routine MIS for hospital statistics on arsenicosis and interlinking with MIS-DGHS.

Figure 11.5 shows the cumulative number of arsenic patients from 1996 to 2012. In 2012, the cumulative number stood at 65,910.

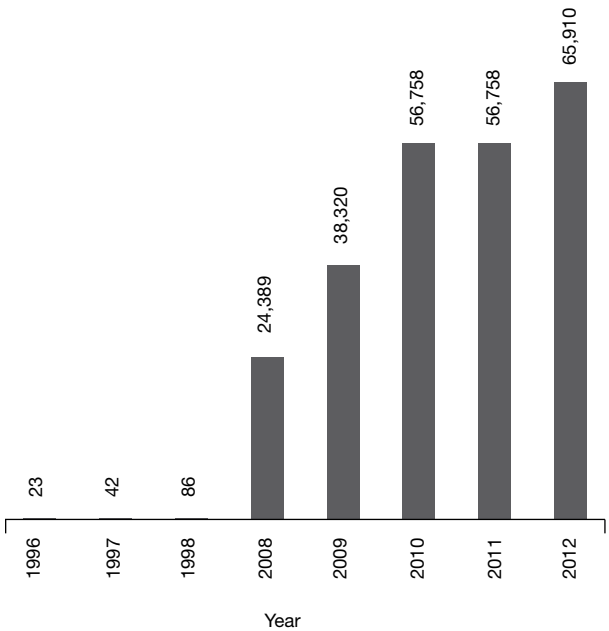


Figure 11.5. Cumulative number of arsenic patients in Bangladesh year by year detected by National Arsenic Program of DGHS

Figure 11.6 shows the distribution of arsenicosis patients by division of Bangladesh. Chittagong division shows nearly half of the identified patients (48%; n=31,230), followed by Khulna (21%; n=13,598), Dhaka (17%; n=11,090), Rajshahi (9%; n=6,120), Rangpur (3%; n=1,674), Barisal (2%; n=1,512), and Sylhet division (1%; n=686).

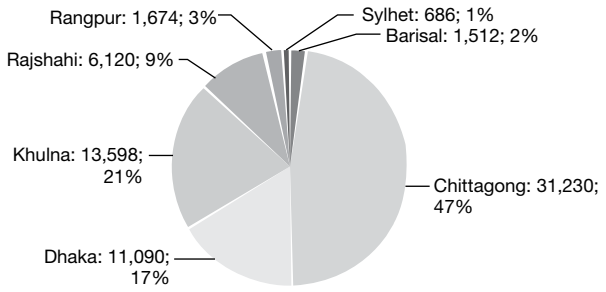


Figure 11.6. Distribution of arsenicosis patients by division of Bangladesh (2012)

Climate change and response

To address climate change-related health issues, the non-communicable disease control unit of DGHS developed and published training modules–one for doctors and another for nurses, paramedics, health assistants, and family welfare assistants. Several training and orientation sessions have been organized at the central, district and upazlla levels. A total of 26,000 field-level personnel have been trained on climate change, health impact, and management. A total of 3,900 teachers have been oriented. After receiving training, the field-level health workers are now organizing court-yard sessions at the communities. They are also registering climate-sensitive diseases in their respective areas. Necessary collaborations are being made to strengthen the activities of Climate Change Health Promotion Unit (CCHPU) of the MOHFW.

Injury situation in Bangladesh

Injury has drawn attention of policy-makers and development activists of Bangladesh since the Bangladesh Health and Injury Survey (BHIS 2005) which revealed an annual estimate of 70,000 injury-related deaths in Bangladesh, the children being the worst victims (43% of the total injury-related deaths). The Center for Injury Prevention and Research, Bangladesh (CIPRB) has been involved in the injury prevention initiatives since 2005 and has a sentinel surveillance system to monitor the injury situation in its intervention areas–Raiganj and Sirajganj. Through the surveillance system, data are collected at a six-month interval from over 31,500 households representing more than 145,000 people. The injury rates in this surveillance area are expected to be lower than the national estimates due to the ongoing interventions in the area. However, this is the only community-based active injury surveillance that exists in the country to measure the injury burden. The mortality rates due to injury in all ages were found to be 37.4 and 43.6 per 100,000 people in 2011 and 2012 respectively. The rate of injury-related mortality in children below18 years of age was 39.9 and 37.8 per 100,000 people in in 2011 and 2012 respectively. Among all children, those aged 1-4 year(s) were the worst victims (72.5 and 56.6 per 100,000 people in 2011

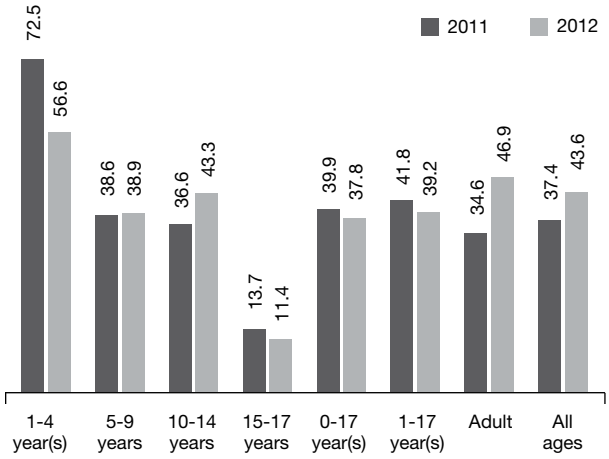


Figure 11.7. Injury mortality per 100,000 population by age-group in the surveillance area of Bangladesh (2011 and 2012)

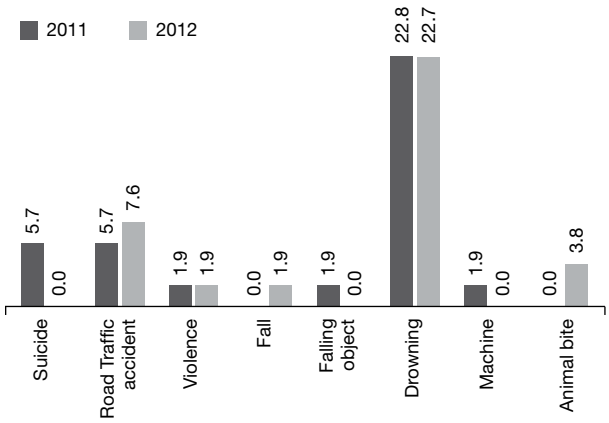


Figure 11.8. Injury-related mortality rate per 100,000 population by cause among children below 18 years in the surveillance area of Bangladesh (2011 and 2012)

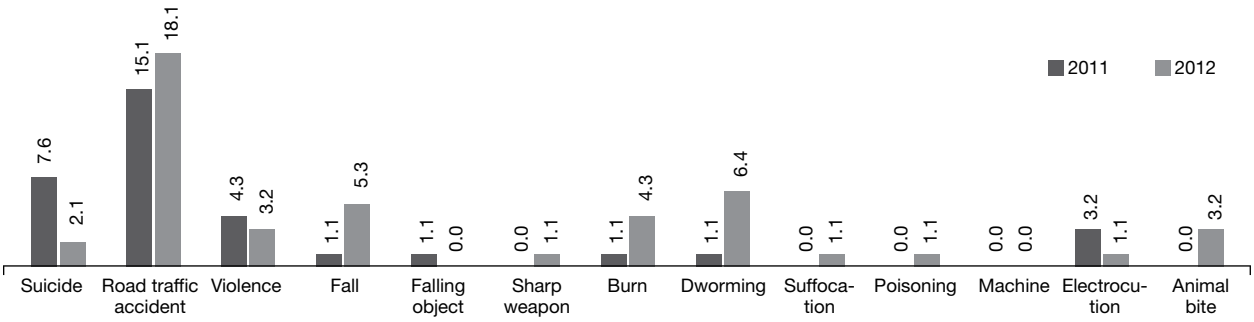


Figure 11.9. Injury-related mortality rate by cause per 100,000 population among adults as found in the surveillance area in 2011 and 2012

and 2012 respectively). Among adults, the rates were 34.6 and 46.9 per 100,000 people in 2011 and 2012 respectively (Figure 11.7).

Figure 11.8 summarizes the injury-related mortality rate by cause per 100,000 people as found in the surveillance area of Bangladesh in 2011 and 2012. Drowning was the leading killer of children below 18 years of age, claiming about 23 lives per 100,000 people.

Figure 11.9 shows the injury-related mortality rate by cause per 100,000 people among adults as found in the surveillance area of Bangladesh in 2011 and 2012. Road-traffic injury was the most common cause of injury-related deaths.

Autism

It is estimated that every day 360,000 babies are born in the world. Sadly, one in every 110 of them is born with an autism spectrum disorder, i.e. more 3,000 new autistic children are added to the existing number every day. The challenges faced by families living in poverty are already immeasurable; it is even more challenging when that child has a complex disability, such as autism. One report from the Department of Social Welfare of Bangladesh estimates that around 280,000 children in Bangladesh are facing autism-related health problems, yielding one in every 500 children. The national health program has identified this problem as a priority and has undertaken the following activities:

(i) national advisory committee on autism and neurodevelopment has been constituted; (ii) a national steering committee on autism by the involvement of 7 relevant lead ministries has been created; (iii) a national strategic plan on autism has been formulated, along with a short-term and a long-term action plan; (iv) autism has been incorporated in undergraduate medical curriculum; (v) child development centers (Sishu Bikash Kendro) have been established in 15 medical college hospitals; (vi) piloting of home-based screening of autism and neurodevelopmental disorders in children aged 0-9 year(s) at selected 7 upazila, one in division, has been conducted; (vii) nurses, paramedics, and doctors have been trained on autism; (viii) IEC materials on autism have been developed; and (ix) Center for Neurodevelopment and Autism in children has been established at Bangabandhu Sheikh Mujib Medical University. Bangladesh remains in the leadership and forefront position in global awareness creation on autism. Under the initiative of Bangladesh, resolutions on autism have been approved by the United Nations General Assembly (2012), Regional Committee Meeting of the WHO South-East Asia (2012), and the Executive Board of the WHO (May 2013).

More population-based actions are needed for primary prevention and control of these diseases since a wide variety of non-communicable diseases in Bangladesh continues to show an increasing disease burden on the country.

CHAPTER 12

SAFE BLOOD TRANSFUSION

Transfusion-transmitted infections reduced due to proper blood screening and absence of paid donors

Dhaka Medical College Hospital, in 1950, first established the blood transfusion service in Bangladesh. Under Health and Population Sector Program (HPSP) 1998-2003, the Safe Blood Transfusion Program (SBTP) was launched in 2000 with the assistance of UNDP to ensure supply of safe blood for humans through screening. Under this program, blood-screening facilities were developed in 99 blood transfusion centers. In 2004, the activities of the Safe Blood Transfusion Program received financial support from the World Bank and DFID through IDA credit. A Memorandum of Understanding (MoU) was signed between MOHFW and WHO under HIV/AIDS Prevention Project (HAPP) with technical assistance from the latter. This continued till 2007. Since then, the activities were being implemented under the Health, Nutrition and Population Sector Program (HNPSP) 2003-2011. The activity is being continued also under the current Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016.

The Safe Blood Transfusion Program (SBTP) made a good progress over the past years through reduction in the number of paid donors from 70% to 0%, capacity-building for blood screening in all blood transfusion centers for HIV, hepatitis B and C, syphilis, and malaria and expansion of activities up to the upazila health complex level. Currently, 208 blood transfusion centers, with 89 in the upazila level, are functional under the program. Blood component separation facilities have been developed in 18 blood transfusion centers. Six centers have been equipped with modern mobile vans for outdoor blood collection. Following is a profile of the SBTP as of 2013:

No. of blood transfusion centers supported currently by SBTP: 208

No. of blood transfusion centers at the upazila level: 89

No. of centers where blood-component separation facilities exist: 18

No. of centers with mobile vans for blood collection: 6

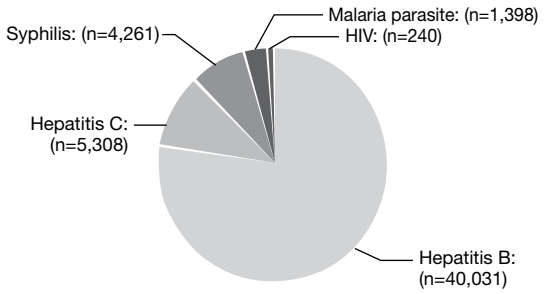


Figure 12.1. Percentage of units of blood rejected due to various reasons from 2001 to 2013 (Total units rejected=51,257)

During 2001 to 2013, a total of 43,40,047 units of blood were tested in 208 centers, out of which 51,257 units were rejected due to the evidence of transfusion-transmitted infections (TTIs). Of the rejected units, 40,031 were rejected for hepatitis B, 5,308 for hepatitis C, 4,261 for syphilis, 1,398 for malarial parasites, and 240 for HIV (Figure 12.1).

Table 12 shows the year-wise distribution of the number of units of rejected blood due to various reasons based on the screening tests. Similar to other years, hepatitis B continues to remain the leading cause of transfusion-transmitted infections in 2013 (0.9%), followed by hepatitis C (0.12%) and syphilis (0.07%) among the screened blood samples.

In 2013, a total of 1,11,481 units of blood components were produced by the blood centers. These included 63,231 units of red blood cell concentrate, 31,787 units of fresh frozen plasma, 25,783 units of platelet concentrate, 633 units of Platelet-rich Plazma (PRP), 13 units of Fresh Plazma (FP), and 4 units of cryoprecipitate. The cumulative production of blood components up to 2013 was 4,90,103 units.

The Safe Blood Transfusion Act 2002 of Bangladesh is in place that circulated the rules and regulations in 2008. There is a reference laboratory for blood transfusion at Dhaka Medical College Hospital. The functions of the reference laboratory are to

Table 12. Cumulative screening report for blood with TTIs, 2001–2013

Year	No. of units tested	HIV+ve*		Hepatitis B+ve		Hepatitis C+ve		Syphilis+ve		Malarial parasite+ve	
		No.	%	No.	%	No.	%	No.	%	No.	%
2001	99653	2	0.002	1381	1.4	82	0.08	290	0.29	7	0.01
2002	170948	4	0.002	2433	1.4	246	0.14	655	0.38	53	0.03
2003	180015	1	0.001	1900	1.1	1024	0.57	428	0.24	13	0.01
2004	121993	36	0.030	1284	1.1	251	0.21	257	0.21	8	0.01
2005	203575	8	0.004	1689	0.8	201	0.10	305	0.15	6	0.00
2006	228127	20	0.009	1814	0.8	242	0.11	209	0.09	1	0.00
2007	324005	27	0.008	2764	0.9	251	0.08	215	0.07	1013	0.31
2008	369026	13	0.004	2996	0.8	309	0.08	143	0.04	4	0.00
2009	358067	9	0.003	2135	0.6	181	0.05	115	0.03	7	0.00
2010	384447	6	0.002	3313	0.9	374	0.10	182	0.05	37	0.01
2011	415372	21	0.005	4356	1.0	272	0.07	179	0.04	39	0.01
2012	541682	56	0.010	5052	0.9	676	0.12	399	0.07	58	0.01
2013	593774	37	0.006	5184	0.9	597	0.10	573	0.10	98	0.02
Total	4340047	240	0.006	36291	0.8	4706	0.11	3950	0.09	1344	0.03

*HIV-reactivity done by rapid test

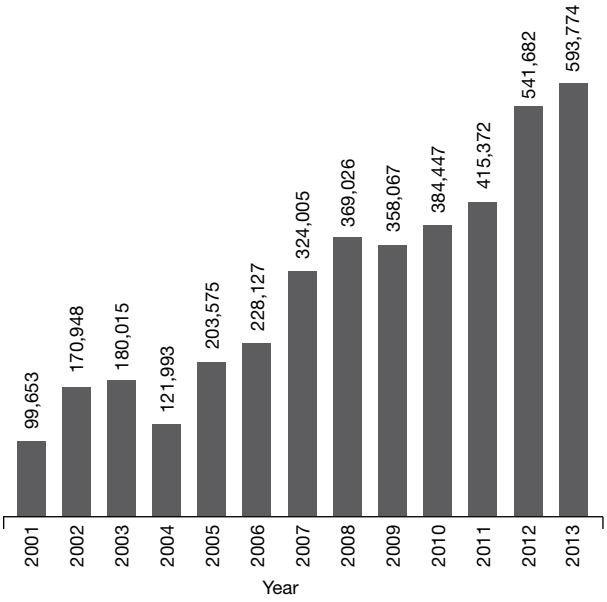


Figure 12.2. Number of blood units collected year-wise by the blood centers under SBTB (n=43,40,047)

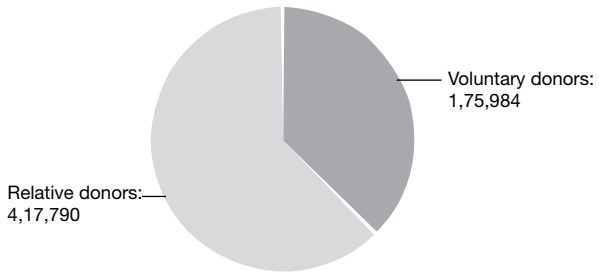


Figure 12.3. Distribution of voluntary and relative blood donors in 2013 (n=5,93,774)

support various organizations for training and monitoring. The reference laboratory is also testing the referred samples and validation of kits. The professionals engaged in the safe blood transfusion program deeply feel that a National Blood Center should be established as soon as possible to further streamline the stewardship role and coordination functions for the current fragmented blood transfusion services operating throughout the country.

The blood centers under the Safe Blood Transfusion Program collectively gathered a total of 43,40,047 units of blood from 2001 to 2013. The year-wise distribution of collection is shown in Figure 12.2. In 2013, the program personnel collected 5,93,774 units of blood. The distribution of voluntary (1,75,984) and relative (4,17,790) blood donors is shown in Figure 12.3.

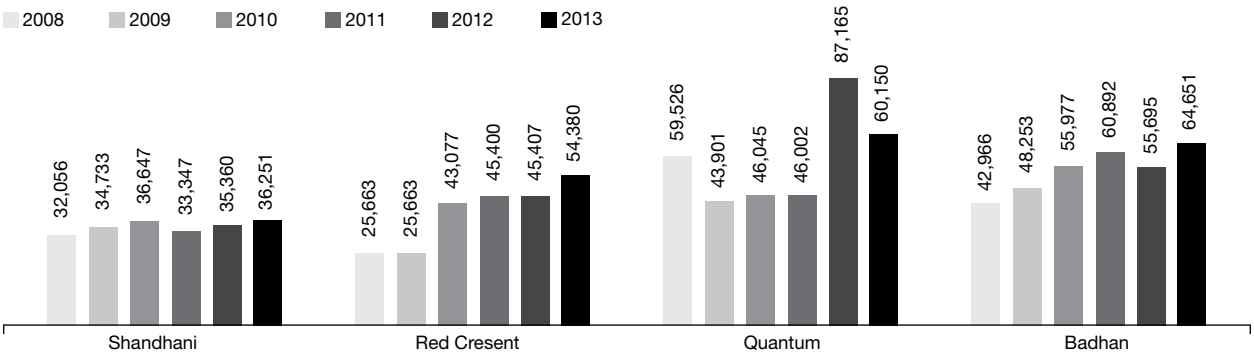


Figure 12.4. Number of units of blood collected by different voluntary blood-donation organizations during the last 5 years

A number of voluntary or non-profit organizations also contribute to encouraging healthy donors for donating blood voluntarily. Some of these organizations have their own set-up for collecting, testing, storing, and distributing blood or blood products. Figure 12.4 shows the year-wise collection by the major voluntary blood-donation organizations.

It is pleasing to note that the Safe Blood Transfusion Program and the voluntary blood-donation organizations could consistently keep the percentage of paid donors to zero. The paid donors are sources of transfusion-transmitted infections (TTIs), viz. hepatitis B and C, syphilis, malarial parasites, HIV, etc., and they dominated the blood donors prior to inception of Safe Blood Transfusion Program and emergence of the voluntary blood-donation organizations. The risk of transfusion-transmitted infections reduced substantially due to the absence of paid donors and screening of collected blood prior to transfusion.

CHAPTER 13

NUTRITION SITUATION IN BANGLADESH

Emphasis given on mainstreaming nutrition service through NNS

Despite significant progress in sustained economic growth, reduction in maternal and child mortality, Bangladesh remains one of the countries with the highest level of malnutrition among the developing countries, with children and women the most affected. The country is on track to attain most of the Millennium Development Goals relating to human development, such as reducing child and maternal mortality. These improvements are, however, yet to be translated into positive changes.

Through NNS, the Government of Bangladesh plans to accelerate the reduction of persistently high rates of maternal and child under-nutrition by mainstreaming and scaling-up the implementation of proven nutrition interventions into health (DGHS) and Family Planning (DGFP) services ...

Public health nutrition program under MOHFW

In current sector program HPNSDP (July 2011-June 2016), the MoHFW has planned mainstreaming nutrition intervention into the health and family planning services, along with scaling up of the provision of community-based nutrition services throughout the country under the OP–National Nutrition Services (NNS). Through NNS, the Government of Bangladesh plans to accelerate the reduction of persistently high rates of maternal and child undernutrition by mainstreaming and scaling-up the implementation of proven nutrition interventions into health (DGHS) and family planning (DGFP) services. Over a period of 17 years, through separate projects (BINP and NNP) the coverage of nutrition service was extended up to 167 upazilas; from July 2011, the National Nutrition Service (NNS) has been operating allover the country. This has resulted in creating the opportunity of establishing a countrywide cost-effective and comprehensive system of nutrition services delivery. Under the National Nutrition Services (NNS), which is housed in the Institute of Public Health Nutrition (IPHN), both DGHS and DGFP are streamlining and strengthening the nutrition services by using regular manpower.

Four hundred and eighty-two medical officers of the upazila health complexes are already designated as Medical Officer (Public Health Nutrition) who is responsible for coordinating all activities of NNS at the upazila level. The component NNS services include: (i) training; (ii) facility-based services; (iii) community/area-based nutrition activities; (iv) human resource development; (v) providing micronutrients to people; (vi) operational research and surveys; (vii) monitoring and evaluation; and (viii) nutrition information system. Capacities of the upazila health complexes, district hospitals, and community clinics as well as of the facilities under DGFP, e.g. MCWCs are now in the process of strengthening. The NNS aims to cater nutrition services through establishing IMCI and Nutrition corners in all the health facilities where IMCI corners are already established. Mass awareness is also being created through behavior change communication (BCC).

Current nutrition situation in Bangladesh

Poor nutritional status is a key health problem in Bangladesh. The Bangladesh Demographic and Health Survey (BDHS) 2011 shows that 41% of the under-five children are stunted, with 15.3% severely stunted (Figure 13.1). The age pattern of stunting shows that it increases with age, being 18% among <6 months children to 52% among children aged 18-23 months. Among children of 48-59 months, the prevalence is 42%. Stunting is more among the rural children (43%) than the urban children (36%). Stunting is the lowest in Khulna and Rajshahi divisions (34%) of Bangladesh. The prevalence of wasting among the

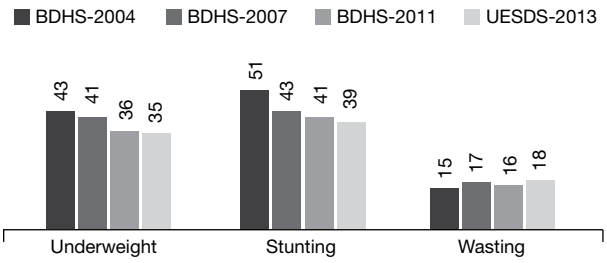


Figure 13.1. Trends in nutritional status of under-five children during 2004-2011 BDHS report and also Utilization of Essential Service delivery Survey 2013 Report

under-five children is 16%, with 4% being severely wasted. The prevalence of underweight children is 36%, with 10% being severely underweight. There have been some improvements in nutritional status of children over the BDHS rounds. As in Figure 13.1, the level of stunting has declined from 51% in 2004 to 41% in 2011. Wasting has declined from 17% in 2007 to 16% in 2011. The level of underweight has declined to 36% in 2011 from 41% in 2007. Utilization of Essential Service Delivery Survey (UESDS), 2013 also depicts that 35% of under-five children were underweight, and 39% of children of same age were stunted.

Another survey is ongoing in several regions of Bangladesh through Food Security Nutritional Surveillance Project (FSNSP) jointly conducted by Bangladesh Bureau of Statistics, Helen Keller International, and BRAC University. This survey provides up-to-date and seasonal information on the nutrition and food security of six surveillance zones in Bangladesh. Round 11 report of this survey done in June to September 2013 reveals that prevalence of wasting is high in Northern Char (17%) than in other areas/zones (Figure 13.2). Interestingly, wasting rate in haor area was comparatively lower (14%). Again, underweight was higher in Northern Char (42%) than other regions. Prevalence of wasting in Northern Char (17%) was even higher than the National BDHS 2011 Prevalence (16%). Prevalence of underweight in three areas: Northern Char (42%), Haor (38%) and Costal Belt (39%) was higher than BDHS 2011 rate (36%).

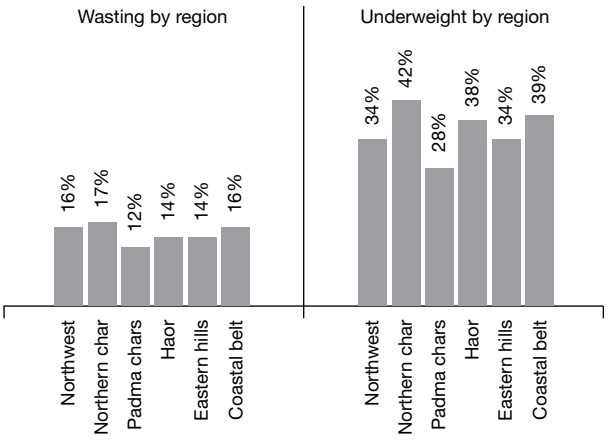


Figure 13.2. Nutritional status by region (June -September 2013)

Figure 13.3 shows the trend of underweight and acute wasting rate over the round of FSNSP. Prevalence of wasting decreased from Round 11 (14%) in Round 12 (9%) and that is also less than BDHS 2011 national prevalence (16%). Prevalence of underweight decreased from Round 11 (34%) in Round 12 (28%), and that was less than BDHS 2011 national rate (36%).

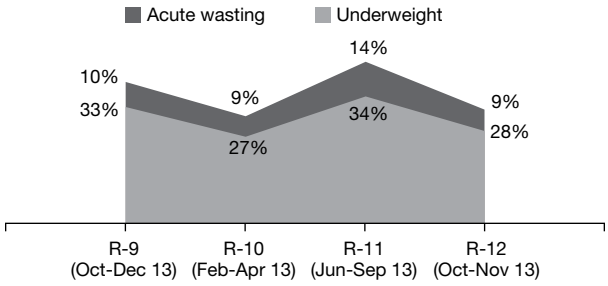


Figure 13.3. Trend of acute wasting and underweight over the rounds

The recent National Micronutrients Status Survey (MNSS) 2011-2012, jointly conducted by the Institute of Public Health and Nutrition (IPHN), UNICEF, icddrb and GAIN, shows that underweight and stunting rates are comparatively high in slum area rather than urban and rural areas (Figure 13.4).

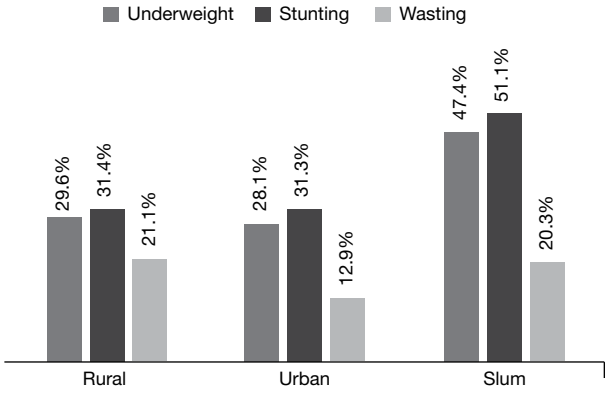


Figure 13.4. Prevalence of underweight, stunting and wasting among under-5 children in rural, urban and slum area

Nutrition status of women and adolescent girls

The nutritional status of adolescent girls has not changed much over the past year, though women's nutritional status has varied significantly. The FSNSP (mentioned above) in Round 12 (October-December 2013) shows that 14% of adolescent girls and 17% of women were severely and moderately underweight (Figure 13.5). The figure also shows that the rate of underweight among women increased from Round 10 (15%) to Round 11 (19%) and then decreased in Round 12 (17%). However, underweight rates for adolescent girls were increasing from Round 10 (9%) to Round 12 (14%).

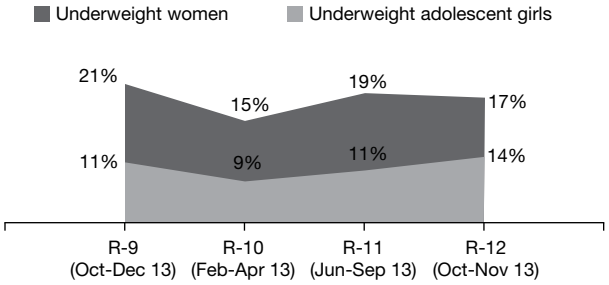


Figure 13.5. Prevalence of underweight among adolescent girls and women (FSNSP 2013 Round 12)

Figure 13.6 shows that there was substantial variation in rates of underweight (severe and moderate) among adolescent girls and women among divisions (FSNSP 2011), with the highest rate among adolescent girls in Khulna division (18%) and among women in Sylhet division (17%).

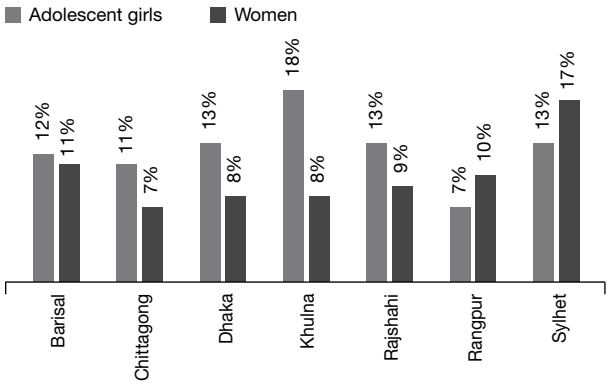


Figure 13.6. Regional variation of underweight among adolescent girls and women

Breastfeeding practices

The BDHS 2011 shows that the exclusive breastfeeding rate among children below 6 months increased from 43% in 2007 to 64% in 2011. Intensive Government programs undertaken with the focus on maternal, newborn and childcare, working in synergy with the health programs undertaken by other stakeholders, have contributed largely to this improvement. It is expected that, if the current initiatives, like promotion of Exclusive Breastfeeding (EBF), Baby-friendly Hospital Initiative (BFHI), and other MNCH programs be scaled up successfully, the HPNSDP 2011-2016 target of exclusive breastfeeding to 50% infants up to 6 months of age would be achieved. The FSNS Round 11 (June-September 2013) findings show that early initiation of breastfeeding for 0-5 months old children was 48%, and 38% were continuing exclusive breastfeeding. As per UESDS report 2013, exclusive breastfeeding is 60%.

Infant and young child-feeding practices

Infant and Young Child-feeding (IYCF) practices include timely initiation of solid, semi-solid or soft foods from six months of age. Overall, 21% of children aged 6-23 months were fed appropriately according to standard IYCF practices in 2011 and this decreases for 42% observed in 2007. However, this is due to change in the definition of IYCF in the demographic health survey tool. UESDS report reveals that 32% of children of 6-23 month were fed as per standard IYCF practice. The NNS is scaling up IYCF services in the facilities and community through community clinics, with the aim of achieving HPNSDP 2011-2016 target of IYCF (52%). The FSNS surveillance in its round 11 (June-September 2013) shows that solid and semi-solid foods have been given to 6-8 months old children in 88% cases, and 34% of 6-23 months old children have been given minimum acceptable diet.

UESDS report reveals that 32% of children of 623 month were fed as per standard IYCF practice. The NNS is scaling up IYCF services in the facilities and community through community clinics, with the aim of achieving HPNSDP 2011-2016 target of IYCF (52%) ...

Micronutrient status

Vitamin A supplementation

The Government of Bangladesh prioritizes vitamin A supplementation as an important public-health program and is distributing vitamin A capsules to children of 6-59 months through National Vitamin A Campaign (NVAC). Every year, two rounds of Vitamin-A capsule supplementation to children aged 6-59 months have been conducted. Health workers and volunteers administer vitamin A capsules to around 20 million children at 140,000 sites located in health facilities, health centers, schools as well as in mobile sites (bus, boat, and railway stations) throughout the country. In 2013, Vitamin A Plus Campaign was organized on 12 March (along with deworming tablet) and 5 October (without deworming tablet). Currently, 98% of 6-11 months old children and 99% of 12-59 months old children are covered through vitamin A. The coverage was 84% according to BDHS 2011 and 75% according to Utilization of Essential Service Delivery Survey, 2013. According to asset index, the coverage was 76.4% in the 'poorest' section and 87.5% in the 'richest' section of the population.

At the national level, over half of the preschool (56.3%) and school-age children (53.5%) are having the mild grade of vitamin A deficiency, while the mild deficiency affects one-third (34.3%) of the NPNL women. Although the prevalence of severe grade of the deficiency was low in all the population groups studied (less than 1.0% in most of the strata), it appeared to be somewhat higher in the slums in the preschool children (2.4%) and school-age children (2.2%). Normal status of retinol in the preschool children was 21.7%, 30.4% and 8.5% in the rural, urban and slums area (MNSS-2011-2012). Figure 13.7 shows severity of vitamin A deficiency among preschool children, school-age children and non-pregnant and non-lactating (NPNL) women.

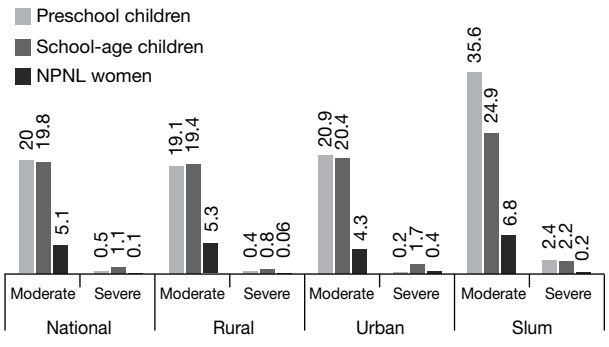


Figure 13.7. Percentage of vitamin A deficiency among preschool children, school-age children and NPNL women

Control and prevention of iron deficiency anemia

NMSS report 2011-2012 shows that prevalence of anemia among the school-age children was 19.1% and 17.1 % respectively in the 6-11 years and 12-14 years age-groups. The prevalence of anemia in the NPNL women was 26.0%. The prevalence of iron deficiency in Bangladesh population appeared to be substantially lower than the widely-held assumption. The amount of consumption of iron from food is short of the daily Recommended Daily Allownce (RDA) in all the population groups studied. The total consumption of iron from food was 41.0-82.0% of the RDA across age-groups and sexes of the studied population groups.

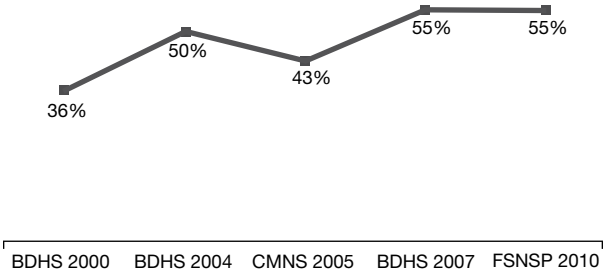


Figure 13.8. Percentage of women who took iron folate tablet during last pregnancy

Control and prevention of iron deficiency and other nutritional anemia was broadly made through the country's routine service-delivery network and the NNS. In 2012-2013, the NNS distributed 200 million iron-folate tablets to the community clinics. Control of nutritional anemia is done by treating intestinal parasites through distribution of albendazole tablets during vitamin A campaign and separate Deworming Week.

Control of iodine-deficiency disorders and other micronutrient problems

The NNS provides training to doctors and other health staff on iodine-deficiency disorders. The NNS also provides training on capacity-building of managers, chemists, and relevant persons in different zones in collaboration with Bangladesh Small and Cottage Industries Corporation (BSCIC). The IPHN laboratory for testing the iodine level in salt has also been strengthened. NMSS 2011-2012 on urinary iodine concentration shows 40% of the school-age children to have

iodine deficiency, suggesting an improved situation from 2004-2005 (33.8%). Among the non-pregnant and nulliparous women, the prevalence of iodine deficiency was 42.1%, showing an improvement from 2004-2005 figures (38.0%). About 80% of the households used iodized salt (iodine level ≥5 ppm) while 57.6% of the households used adequately-iodized salt (iodine level ≥15 ppm). In the rural area, the use of adequately-iodized salt was just 51.8%. The national rate of the use of 'brand' salt is 75.8%; however, a substantial proportion (30%) of households in rural area still uses 'open' salt. The use of 'open' salt is 37.0% and 17.0% in the 'poorest' and the 'richest' households respectively. The proportion of retailer salt samples with adequately-iodized salt (≥20 ppm) was 66.4%.

Micronutrients consumption from foods

Survey shows that consumption of foods of animal source is increasing in the country (Household Income & Expenditure Survey of Bangladesh 2010). In the case of vitamin A, the median daily consumption, as expressed by Retinol Equivalents (RE) is 270.0, 318.0, and 372.0 respectively among the preschool and school-age children, and the non-pregnant and nulliparous women, are certainly short of the RDA they need. Daily median consumption of iron from foods is 4.17, 5.21, and 6.64 mg among the preschool and school-age children; non-pregnant and nulliparous women are also short from the RDAs they require. The consumption of iron from animal source, the form of dietary iron that is readily absorbed in the body, is low in terms of the total iron consumption. The share of iron from animal source is 23.0%, 24.0%, and 18.0% of the total iron consumption respectively among the population groups mentioned above. The median daily consumption of zinc from foods among the preschool children is 3.2 mg and 2.6 mg respectively in the urban and slum area against the RDA of 3 to 5 mg.

Zinc status

The NMSS 2011-2012 provided for the first time in Bangladesh the nationally representative data on zinc status in the selected populations. The national prevalence of zinc deficiency was 44.6% in the preschool children. Urban children were less likely to suffer from zinc deficiency than their rural and slum peers (29.5% urban vs 48.6% rural vs. In the NPNL women the national prevalence was 57.3%. However, over half of the NPNL women suffered from zinc deficiency at the national level and, in all the strata, with prevalence being the highest in women living in slums (66.4%). The level of consumption of zinc was well below the recommended daily level. In the NPNL women total consumption was 54.7% and 47.0% of the recommended daily amount in the urban and slum area respectively. Of the total consumption, majority comes from plant origin, which is poorly bioavailable.

Since NNS has started its implementation with a concept of 'Mainstreaming' with DGHS and DGFP, the nutrition activities are implemented by field staff of DGHS and DGFP ...

Nutrition programs through DG Family Planning

MCH Services Unit of the Directorate General of Family Planning (DGFP) has been providing healthcare to the pregnant mothers and under-5 children since 1975. Monitoring of maternal weight, IFA supplementation and nutrition education during ANC, growth monitoring of under-5 children, referral of severe malnourished children, vitamin A supplementation of under-5 children, etc. have been being provided by the DGFP since 1975.

Since 2011, the MCH Services Unit of the DGFP has been implementing MYCNSIA (Maternal and Young Child Nutrition Security Initiatives in Asia) with collaboration of UNICEF in 22 upazilas of 10 districts covering 6,765,910 population. The initiatives taken are: counseling to mothers/ caregivers about IYCF, distribution of MNP among 6-23 months old children, counseling to pregnant and lactating mothers on feeding practice and IFA, food security intervention and handwashing/ hygiene practice for the communities.

For implementing the MYCNSIA, MCH Services Unit of DGFP has trained officials of different levels (both ToT and core training), developed training materials, developed web-based MIS, conducted baseline survey, and procured and distributed MNP sachets, etc.

MCH Services Unit of DGFP will scale up MYCNSIA in all upazilas of the implementing 10 districts in near future. Service registers and reporting formats were revised to include nutrition information. MIS of DGFP is currently revisited with nutrition indicators.

Mainstreaming nutrition information system

National Nutrition Services (NNS), IPHN is implemented through an Operational Plan of the MOHFW's Health, Population and Nutrition Sector Development Plan (HPNSDP) from 2011 to 2016. NNS is the umbrella organization for the implementation and management of nutrition related activities throughout the country. NNS works closely with DGHS and DGFP in order to implement programs for nutrition effectively. NNS supports the delivery of nutrition services and interventions with the support of stakeholders at all levels, including the government and development partners.

Since NNS has started its implementation with a concept of 'Mainstreaming' with DGHS and DGFP, the nutrition activities are implemented by field staff of DGHS and DGFP. NNS has been working with DGHS, DGFP, IMCI, and RCHCIB (Community Clinic Project) to include nutrition related indicators within the existing MIS of DGHS and DGFP rather than developing a parallel system. Standard nutrition indicators to assess effective coverage of interventions were also defined to measure scale-up and identify gaps. Nutrition indicators have been incorporated in service register and reporting format of IMCI: Nutrition Corner, Community Clinic Project, HMIS, and MIS of DGFP. NNS is being extracting nutrition data from these MISs. Standardized supervision checklists were also developed for different nutritional activities.

Figure 13.9 and 13.10 show reporting status from Upazillas and Community Clinics till December 2013.

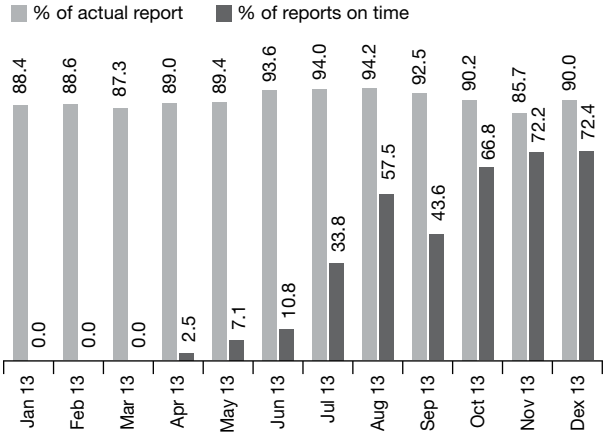


Figure 13.9. Graph showing progress on reporting through DHIS2 from Upazilla

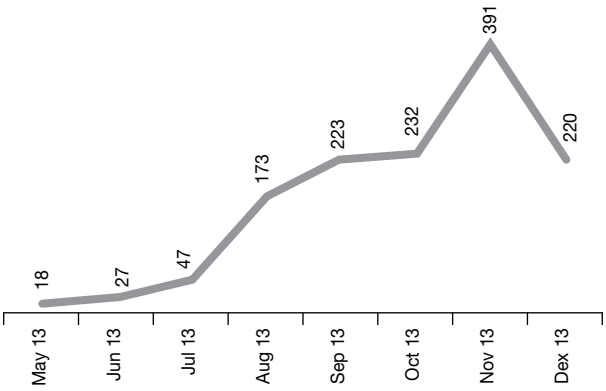


Figure 13.10. Graph showing progress on 'Individual case base reporting' from community clinics

CHAPTER 14

HEALTH INTERVENTIONS BY IEDCR AND IPH

Public-health commitments to the nation being fulfilled

The two national institutions: Institute of Epidemiology, Disease Control and Research (IEDCR) and the Institute of Public Health (IPH) undertook significant public-health interventions on behalf of the Ministry of Health and Family Welfare of Bangladesh. This chapter highlights some of the interventions undertaken by these two institutions.

Institute of Epidemiology, Disease Control and Research (IEDCR)

Mandate of IEDCR

The IEDCR, since its inception in 1976, continues to be a national institution responsible for conducting disease surveillance and outbreak investigations. The Institute is the WHO-designated National Influenza Centre (NIC) in Bangladesh. With a staff strength of 115, the IEDCR has eight departments, viz., Biostatistics, Epidemiology, Medical Entomology, Medical Social Science, Microbiology, Parasitology, Virology, and Zoonosis. The specific objectives of IEDCR are to (i) conduct disease surveillance; (ii) conduct outbreak investigation and response; (iii) conduct epidemiological research; and (iv) provide training to concerned staff.

Laboratories of IEDCR

The Institute established a biosafety level 3 (BSL3) laboratory. The other laboratories of the Institute are: Medical Entomology Laboratory, Microbiology Laboratory, Parasitology Laboratory, Virology Laboratory, Zoonosis Laboratory, RT-PCR Laboratory, and BSL2 Laboratory. The laboratories have wide-ranging diagnostic facilities for testing parasitic and fungal pathogens that cause visceral leishmaniasis (kala-azar, PKDL), malaria, and intestinal diseases, along with dermatophytes, and candida; those that cause viral diseases, e.g. Nipah encephalitis; influenza; hepatitis A, B, C, and E virus (HAV, HBV, HCV, and HEV); HIV; dengue; and chikugunya; bacterial diseases, e.g. enteric fever; brucellosis; rickettsial diseases; and other aerobic and anaerobic bacterial infections. These laboratories also conduct biochemical tests. The IEDCR laboratories have facilities for cell-culture also. The Department of Entomology regularly performs biological efficacy tests for insecticides.

Outbreak investigations

The IEDCR conducted 107 outbreak investigations since 2007 (11 in 2007, 29 in 2008, 10 in 2009, 17 in 2010, 22 in 2011, and 18 in 2012; <www.iedcr.gov.bd>). The outbreak investigations in 2007 were notable for identification of Nipah virus outbreak, mass psychogenic illness in 18 districts, and outbreak of illness due to toxic *Ghagra shak* in Sylhet. The 2008 outbreak investigations were notable for identification of Nipah virus, puffer-fish poisoning, mass psychogenic illness, first human case of avian influenza (AI), and chikungunya. The investigations in 2009 were notable for identification of pandemic influenza A H1N1 (swine flu), chikungunya, cutaneous anthrax, pesticide poisoning, and mass psychogenic illness. Notable outbreaks investigated in 2010 were for Nipah virus, pneumonia, bronchiolitis, chicken pox (in Lama), suspected water contamination (in Boropukuria Power Plant), anthrax (in Tangail, Sirajganj, and Pabna), suspected insecticide poisoning (in Naogaon), mass psychogenic illness and rabies (in Narsingdi). Investigations for Nipah virus, cholera and shigellosis outbreaks, detection of the second and third human cases of avian influenza (H5N1), the first case of H9N2, investigation for suspected pesticide poisoning, cutaneous anthrax, suspected rubella encephalitis, hepatitis E, H5 outbreak among ducks and waterfowl (for human contact investigation), influenza B outbreak, respiratory virus cluster, and unknown diseases were the major activities of IEDCR in 2011. The prominent outbreaks investigated in 2012 were for Nipah virus, detection of avian Influenza H5N1, mass psychogenic illness, cutaneous anthrax, Japanese encephalitis, chikungunya, dengue, and suspected pesticide victims.

The incidents of public health emergency, which were dealt with by National Rapid Response Team (NRRT) of IEDCR in 2013 are: Nipah encephalitis, death due to Influenza H5N1, mass sociogenic illness among students and garments workers, food poisoning, cutaneous anthrax, and cholera outbreak. In 2014 (up to 14 July) NRRT conducted

outbreak responses; important among them are: Nipah encephalitis, food safety emergency response, mass sociogenic illness among garments workers, and cutaneous anthrax.

Routine disease surveillance by IEDCR

Disease surveillance is one of the main activities of IEDCR. Routine and disease-specific surveillances are conducted round the year. The routine surveillances include: (i) priority communicable diseases; (ii) sentinel surveillance; and (iii) institutional disease surveillance. The disease-specific surveillances are: (i) event-based surveillance–outbreak investigation and response; (ii) Nipah surveillance; (iii) acute meningo-encephalitis syndrome surveillance; (iv) hospital-based influenza surveillance in 12 (tertiary-care hospitals) sites; (v) national influenza surveillance–Bangladesh (NISB) in 14 district hospitals; (vi) sero-prevalence of antibodies to avian influenza A viruses among Bangladeshi workers of poultry markets; (vii) surveillance for human infections with avian influenza A viruses among workers of live bird markets and their household members in Dhaka city area; (viii) community-based avian/human influenza surveillance among poultry workers in H5-infected poultry farms; (ix) high-risk group surveillance in wet markets under Dhaka City Corporation; (x) surveillance for hospital-acquired respiratory infections in patients and healthcare workers in three tertiary-care facilities; (xi) web-based integrated disease surveillance up to upazila level; (xii) behavioral risk factor surveillance (BRFSS), Bangladesh, through telephone interviews; and (xiii) hospital-based dengue surveillance.

Web-based disease surveillance

The IEDCR uses e-connection with offices of civil surgeons and conducts web-based disease surveillance covering whole of Bangladesh. This surveillance has been extended to the upazila level. Data-entry is done directly at the sources in coordination with district- and tertiary-level hospitals. Private and NGO health facilities will also participate in this endeavor.

Behavioral Risk Factor Surveillance System (BRFSS), Bangladesh (Cell phone-based surveillance)

The IEDCR have introduced cell phone-based behavioral risk factor surveillance system for NCDs. This surveillance dealt with common health conditions, risk factors for chronic diseases, the use of preventive healthcare services, and healthcare-seeking behavior among the residents of Dhaka City Corporation area using data from the Behavioral Risk Factor Surveillance System (BRFSS), Bangladesh; this is the initial phase of BRFSS in Bangladesh. This initial phase of BRFSS and its successful outcome in 2012 helped in further program planning and establishing a successful cell phone-based surveillance system in the whole country.

Training/workshop conducted by IEDCR

The training programs and workshops conducted by the institute in 2012 include: (i) Workshop on development of SOPs and updating of formats for integrated disease surveillance and early warning and alert system for epidemic-prone diseases; (ii) Workshop on review and updating of strategies and guidelines of integrated disease surveillance, with development of plan of action: Collaborative workshop with International Association of National Public Health Institutes (IANPHI) on mentorship and scientific writing; (iii) Refreshers' training for physicians on SOPs on avian influenza in humans; (iv) Training of medical technologists on detecting emerging and re-emerging diseases; (v) Orientation of physicians, nurses, and auxiliary staff on the strategy and guideline for prevention, control, and management of Nipah and other encephalitis; (vi) Advocacy of multisectoral partners for International Health Regulations (IHR) 2005 at all levels, including Points of Entries (POEs); (vii) Workshop on development of strategy and guideline for networking among public health laboratories; (viii) Orientation of journalists on emerging diseases; (ix) Training of Upazila Rapid Response Team (URRT) members on emerging infectious diseases and outbreak investigation; (x) Training of physicians of urban health centers on emerging infectious diseases; (xi) Consultative meeting for inclusion of IHR in medical curriculum; (xii) Advocacy on IHR 2005 for policy-makers, health service providers, and relevant agencies at all levels; (xiii) Advocacy meetings on IHR 2005 for academicians of all medical colleges and Institutes; (xiv) Capacity-building of technical personnel under health, customs and immigration of PoEs for implementation of IHR 2005 at designated PoEs; (xv) Capacity-building of NGO/DCC health personnel for strengthening wet market surveillance in city corporation areas; (xvi) Workshop on Envisioning One Health for emerging infectious diseases and beyond: Developing the country-level strategic framework and multi-year roadmap for Bangladesh; and (xvii) Workshop on One Health for infectious diseases in Bangladesh: Validating the country-level strategic framework and action plan.

Other activities done by IEDCR

The IEDCR developed a number of policies, strategies, and guidelines in 2012, which include (i) Strategy and guideline for prevention, control

and management of Nipah and other encephalitis; (ii) Strategy and guideline for networking among public health laboratories; (iii) SOP for web-based integrated disease surveillance and early warning and alert system for epidemic-prone diseases; (iv) Guidelines on emerging infectious diseases and outbreak investigation; (v) Updating health rules for designated POEs and national legislation, regulations, and other instruments for IHR 2005 implementation; and (vi) Development of new law for implementations of IHR 2005.

Activities in 2014 (ongoing and planned)

1. Digitalization of the surveillance system in Bangladesh—cell phone-based surveillance on major non-communicable diseases (NCD) and important communicable diseases throughout Bangladesh
2. Establishment of Foodborne Illness Surveillance, Bangladesh in the whole country
3. Tuberculosis Prevalence Survey in Bangladesh funded by WHO
4. Behavioral and Serosurveillance of HIV infected persons in whole country.

IEDCR activities in 2013

1. IEDCR was declared the 8th Global Disease Detection Regional Center for the Centers for Disease Control and Prevention (CDC), Atlanta, USA
2. Commencement of Field Epidemiology Training Program, Bangladesh (FETP,B) to train the government physicians as future public health professionals.
3. Developed capacity and facilities for testing Middle East Respiratory Syndrome-Corona Virus (MERS CoV)
4. Contribution in South-East Asia Regional Certification Commission for Polio Eradication (SEARCCPE) of World Health Organization
5. Contribution as one of the 15 members of Emergency Committee of Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) formed by DG of WHO
6. Organized the first National Public Health Conference 2013 in Bangladesh
7. Director, IEDCR re-elected member of the Executive Board of the International Association of National Public Health Institutes (IANPHI)
8. Prevalence survey on HIV among pregnant mothers in Sylhet Division conducted
9. Procurement of gene sequencer machine for performing genome sequencing of important pathogenic organisms
10. Development of One Health strategy documentation
11. Trained 738+332 doctors, 154 nurses on MERS-CoV infection control and management.

Activities during 2009-2013

1. Continuation of influenza surveillance system, including Hospital-based Influenza Surveillance (12 tertiary-level hospitals); National Influenza Surveillance, Bangladesh (7 district hospitals) and Community Influenza Surveillance (ongoing)
2. Nipah Encephalitis Surveillance, including event-based surveillance in high-endemic regions allover Bangladesh (ongoing)
3. Hospital-based Rotavirus & Intussusception Surveillance (HBRIS) in three selected hospitals across the country since July 2012
4. Surveillance on acute meningo-encephalitis, Japanese encephalitis, cutaneous anthrax, etc. (ongoing)
5. Web-based disease surveillance for priority communicable diseases in Bangladesh (diarrheal diseases, malaria, kala-azar, tuberculosis, leprosy, encephalitis, and other unknown diseases) (ongoing)
6. Outbreak investigations conducted—10 in 2009, 17 in 2010, 22 in 2011, 18 in 2012, and 20 in 2013
7. Activation of biosafety level 3 (BSL3) laboratory—only one in the government health sector
8. Operational biosafety level 2 (BSL2) laboratories for diagnosing important communicable diseases for the country.

Research conducted by IEDCR

The research conducted by IEDCR in 2012 include: (i) Assessment of the impact of hepatitis B vaccination in Bangladesh, a sero-prevalence study; (ii) Safety and efficacy of Liposomal Amphotericin B (Ambisome) in Bangladeshi patients with visceral leishmaniasis–a Phase III clinical trial; (iii) HIV, syphilis, and hepatitis among pregnant women in selected health facilities of Greater Sylhet area in Bangladesh; (iv) Assessment of the vulnerability of population and the health system in Bangladesh to the impact of climate change; (v) Effectiveness of *Ghagra shak* poisoning prevention campaign in Sylhet: a post-test only intervention control study; (vi) Mitigating the impact of climate change to reduce the burden of climate-sensitive illnesses;

(vii) Assessing prevalence and risk factors of mild/asymptomatic H5N1 infections among persons exposed to H5N1-infected poultry; and (viii) Estimate the risk of mild human infection among persons exposed to H5N1-infected poultry.

The list of research activities conducted in 2013 include the following:

1. Tuberculosis Prevalence Survey in Bangladesh. Principal Investigator: Prof. Mahmudur Rahman; Co-Investigator: Dr. M. Mushtuq Husain, Dr. Asif Mujtaba Mahmud, Dr. Ahmad Raihan Sharif, Dr. Mahbubur Rahman *et al*.
2. Foodborne Illness Surveillance. Principal Investigator: Prof. Mahmudur Rahman; Co-Investigator: Dr. M. Mushtuq Husain, Dr. Salim Uzzaman, Prof. A.K.M. Shamsuzzaman, Dr. Farhana Haque *et al*.
3. Evaluation of Web-based Disease Surveillance on Foodborne Illness. Dr. Kazi Ahmed Zaki
4. Evaluation of Influenza Surveillance. Dr. Monalisa
5. Evaluation of EPI Surveillance. Dr. Mallik Masum Billah
6. Evaluation of TB Surveillance. Dr. Rabeya Sultana
7. Evaluation of Non-communicable Disease Surveillance. Dr. Shamsad Rabbani Khan

International affiliation

The IEDCR is a member of the International Association of National Public Health Institutes (IANPHI), Global Outbreak Alert Response Network (GOARN). Director of IEDCR is a member of the Executive Board of IANPHI. He is also a member of the 11-member Emergency Committee on Middle East Respiratory Syndrome Coronavirus (MERS-CoV) formed by Director General of WHO. The IEDCR has collaborative activities with the Centers for Disease Control and Prevention (CDC) of USA, Rockefeller Foundation, icddrb, and IANPHI. The Institute is supported by WHO, UNICEF, FAO, USAID, and other UN and international agencies.

Director IEDCR is a member of the WHO Emergency Committee on Middle East Respiratory Syndrome Corona Virus (MERS-CoV) and of another WHO Committee for International Certification of Polio Eradication. These two committees are formed by Director General of WHO.

Institute of Public Health

Mandate of IPH

The Institute of Public Health (IPH), established in 1953, is responsible for ensuring the (i) quality of food and water; (ii) production of vaccines, intravenous fluids, antisera and diagnostic reagents; and (iii) diagnosis of infectious diseases. The IPH also conducts research on the above disciplines. The IPH has five major sections and several units to perform the different activities.

Production of intravenous fluids

Table 14.1 shows the quantity of different types of intravenous fluids produced by IPH over the last 5 years (2009 to 2013).

Table 14.1. Production of intravenous fluids by IPH over the last 5 years (2009 to 2013)

Item	Pack-size (ml)	2009	2010	2011	2012	2013
Glucose saline	1000	107724	87040	70700	81590	111008
	500	180489	139630	143225	127255	130733
Glucose aqua	1000	86243	85894	66225	82810	88499
	500	154894	125044	120235	112785	118525
Normal saline	1000	50978	64471	51078	61471	93860
	500	91854	93291	101394	12179	114010
Cholera saline	1000	80665	67440	56367	81227	87585
	500	135443	121350	107320	124120	118030

Item	Pack-size (ml)	2009	2010	2011	2012	2013
P.D. fluid	1000	46085	30110	21192	25530	40125
	500	-	-	-	-	-
3% Normal saline	1000	-	-	-	-	-
	500	10674	7740	11130	10479	10149
Baby saline	1000			-	-	-
	500	26120	21560	30475	36355	33864
Hemodialysis fluid	1000	12600	8150	7830	10700	5868
	-	-	-	-	-	-
Hartman's Solution	1000	-	-	-	-	-
	500	144943	124040	110305	86465	24380

Production of blood bags and related accessories

Table 14.2 shows the quantity of blood-bags and related accessories produced by IPH over the last 5 years (2009 to 2013).

Production of antirabies vaccines

Table14.3 shows the quantity of antirabies vaccines produced by IPH during 2008 through 2012.

Table 14.2. Production of blood-bags and accessories by IPH over the last 5 years (2009 to 2013)

Item	Pack type	2009	2010	2011	2012	2013
CPD blood-bag	Single	85800	83890	62272	105523	66117
Baby bag	150 mL	-	-	1400	-	300
Transfusion set	-	-	-	3800	58000	127830
Infusion set	-	-	-	10200	75600	32200

Table 14.3. Production of antirabies vaccine by IPH during 2008 to 2012

Year	For humans (5 mL)			For animals (10 mL)		
	mL	Ampoule	Course	mL	Ampoule	Course
2008	3017125	2848440	83793	619620	51990	15570
2009	2895500	579100	41365	543800	54380	1295
2010	2296100	459220	32802	324500	32450	773
2011	1296370	259274	18519	368300	36830	877
2012	476800	95360	6811	124300	12430	296

Production of diagnostic reagents

Table 14.4 shows the quantity of different types of diagnostic reagents produced by IPH from 2009 to 2013.

Production of oral rehydration salt

Figure 14.1 shows the quantity of oral rehydration salt (ORS) produced and distributed by IPH from 2009 to 2013.

Testing of food, water, drug and stool samples

Table 14.5 shows the number of food samples tested by IPH from 2009 to 2013. The table also shows the

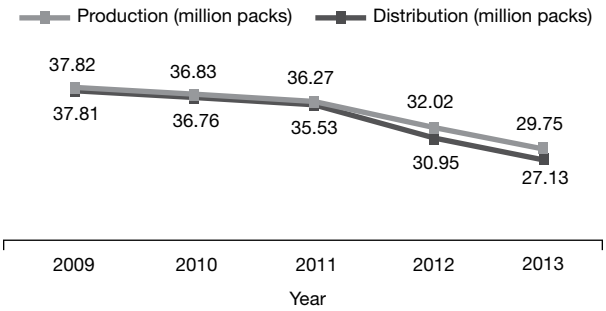


Figure 14.1. Production and distribution of oral rehydration salt (ORS) by IPH over the last 5 years (2009 to 2013)

Table 14.4. Production of diagnostic reagents by IPH (2009 to 2013)

Item	2009	2010	2011	2012	2013
Benedict's Solution (L)	457	460	360	400	140
ESR fluid (L)	155	160	89	160	180
20% Sulfuric acid solution (L)	-	30	NIL	-	-
N/10 Hydrochloric acid solution (L)	60	50	41	70	40
Acetone alcohol (L)	25	NIL	NIL	60	02
5% Acetic acid solution (L)	80	40	10	60	30
WBC fluid (L)	70	100	NIL	40	-
RBC fluid (L)	-	30	NIL	30	-
30% Suplhosalicylic acid (L)	-	04	NIL	10	-
20% Sodium hydroxide solution (L)	-	NIL	NIL	-	-
20% Potassium hydroxide solution (L)	-	NIL	NIL	-	-
Semen analysis fluid (L)	-	NIL	10	-	-
Normal saline (L)	90	20	NIL	20	40
Methylene Blue (L)	20	05	NIL	-	-
Crystal violet (L)	27	05	NIL	-	-
Basic fuchsin (L)	5	NIL	NIL	10	-
Carbol fuchsin (L)	22	NIL	NIL	-	-
Gram iodine (L)	20	NIL	5	5	-
Lugol's iodine (L)	50	05	15	10	-
Leishman stain (L)	61.8	43	49.6	72	26
Giemsa stain (L)	71.9	34	43	40	33.5
Glucose kits	100	NIL	48	99	-
Bilirubin kits	96	97	NIL	149	-
Creatinine kits	47	49	250	298	-
Uric Acid kits	-	NIL	NIL	-	-
EDTA vials	511	NIL	NIL	-	-
Urea kits	-	-	48	50	-

Table 14.5. Food samples tested IPH over the last 5 years (2009 to 2013)

Year	Total samples	Genuine		Adulterated	
		No.	%	No.	%
2009	6338	3356	52.9	2982	47.1
2010	5749	2759	48	2990	52
2011	5812	2671	45.96	3147	54.04
2012	5322	2734	51.37	2558	48.63
2013	4967	2830	56.98	2137	43.02

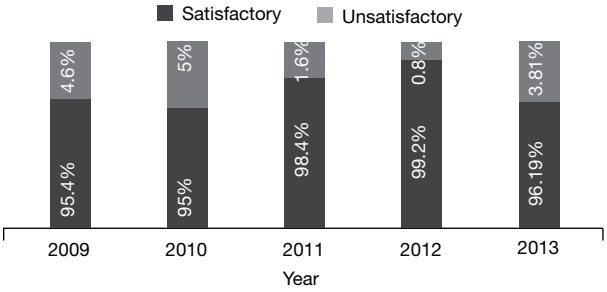


Figure 14.2. Result of water samples tested chemically by IPH in the last 5 years (2009 to 2013)

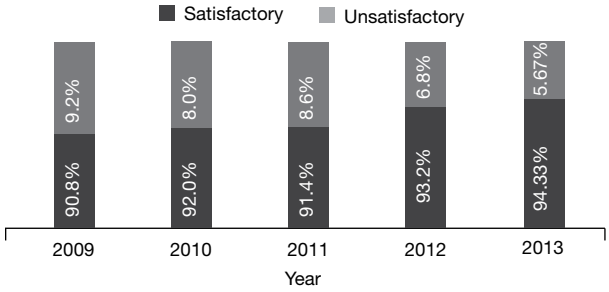


Figure 14.3. Result of water samples tested bacteriologically by IPH over the last 5 years (2009 to 2013)

distribution of the genuine and adulterated samples out of the total samples tested each year.

Figure 14.2 shows the results of water samples tested by chamical means by IPH during 2009 to 2013.

Figure 14.3 shows the results of water-samples for which bacteriological test was done by IPH during 2009 to 2013.

Table 14.6 shows the number of drug samples received from 2009 to 2013 by IPH and their test results.

The National Polio Laboratory of IPH is a WHO-accredited laboratory established to assist the eradication of wild polio virus from the country. It is a partner of SEARO-WHO Polio Network. Table 14.7 shows the number of stool samples tested by IPH for polio virus from 2009 to 2013 and the results of the tests.

Serological tests for measles and rubella

The Measles Laboratory of IPH is involved with the serological study of measles and rubella to support measles control program in the country. Table 14.8 shows the numbers of measles-positive, rubella-positive and negative blood samples tested by the Measles Laboratory of the Institute from 2009 to 2013.

Routine blood, serum, stool, urine, sputum, throat-swab, and ear-swab tests

The IPH performs routine tests on blood, serum,

Table 14.6. Number of drug samples received and tested by IPH with their results (2009 to 2013)

Year	Samples received (N)	Satisfactory (N)	Unsatisfactory (N)	Not analyzed	Feedback given to senders
2009	3145	3078	67	-	-
2010	5006	3833	82	1091	-
2011	3720	2583	104	1033	-
2012	4239	2276	95	1868	264
2013	5618	4635	162	21	962

Table 14.7. Number of stool samples tested by IPH for polio virus from 2009 to 2013 and their results

Item	2009	2010	2011	2012	2013
AFP cases (N)	1522	1541	1600	1570	1433
Samples (N)	3483	3464	3619	3450	3206
Polio virus isolates (N)	56	72	75	84	68
Wild polio viruses (N)	-	-	-	-	-
Vaccine (Sabin) viruses (N)	56	72	75	84	68
NPEV (Non-polio enteroviruses) (N)	684	645	638	489	590
Negative samples (N)	2743	2746	2906	2877	2584
Total (N)	8544	8540	8913	8554	-

stool, urine, sputum, throat-swab, ear-swab, etc. Table 14.9 shows a summary of the tests done on such samples by the Institute from 2009 to 2013.

Visits by medical and dental students

Figure 14.4 shows the number of medical/dental students who visited IPH during 2009 to 2013). Graduate medical and dental students from almost all medical colleges come to see the activities of IPH for learning. The IPH is a designated site for field visit by medical students in the country.

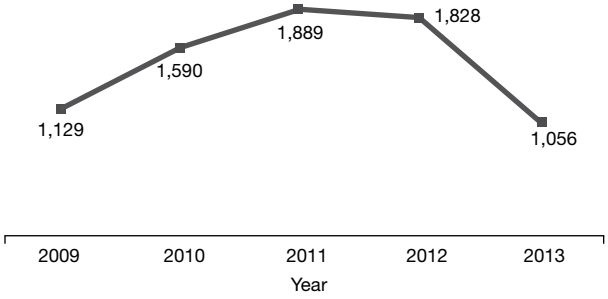


Figure 14.4. Number of medical/dental students who visited IPH during 2009 to 2013

Table 14.8. Number of measles-positive, rubella-positive (IgM antibody) and total negative blood samples (both measles and rubella) tested by the Measles Laboratory of IPH from 2009 to 2013

Test	2009	2010	2011	2012	2013
Measles-positive	35	51	1788	714	77
Rubella-positive	1,133	1,425	672	481	639
Total negative	769	817	1633	1359	1047
Total samples	1937	2293	4093	2590	1763

Table 14.9. Number of routine tests done by IPH from 2009 to 2012

Test	2009	2010	2011	2012
Biochemical (blood)	-	-	-	09
Serological	-	-	11043	6449
Routine examination (stool, blood-CP, urine, sputum)	82	162	157	79
Culture and sensitivity (stool, blood, urine, sputum, throat-swab, ear-swab)	78	30	-	-

CHAPTER 15

RESEARCH AND DEVELOPMENT

Encompassing wider disciplines on the research agenda

There are several ongoing research projects on health, nutrition, and environment in collaboration with renowned public health universities in the world. Several research organizations, both in the private and public sectors, are conducting research on various health topics. In 2013, MIS-DGHS received information on research from several public, private and autonomous institutions, which include Bangladesh Medical Research Council (BMRC), Institute of Epidemiology, Disease Control and Research (IEDCR), National institute of Preventive and Social Medicine (NIPSOM), Institute of Mother and Child Health (ICMH), International Centre for Diarrheal Disease Research, Bangladesh (icddr,b), and the James P. Grant School of Public Health under BRAC University.

Bangladesh Medical Research Council

Bangladesh Medical Research Council (BMRC) was established in 1972 by order of the President as an autonomous body under the Ministry of Health and Family Welfare (MOHFW). The objectives, rules, and regulations of BMRC were formulated by the Ministry's resolution in 1974 and 1976. The resolution states BMRC as the focal point for health research in Bangladesh. The main activities of BMRC include providing research fund, publication of journals and research bulletins, provision of training, and issuing ethical clearance. The list of BMRC seminars, research, and publications is provided in the annex.

International Centre for Diarrheal Disease Research, Bangladesh

The International Centre of Diarrheal Disease Research, Bangladesh (icddr,b) is an international health research institution located in Dhaka. Being dedicated to saving lives through research and treatment, the organization addresses some of the most critical health concerns ranging from improving neonatal survival to HIV/AIDS. In collaboration with academic and research institutions throughout the world, icddr,b conducts research, training, and extension activities as well as program-based activities to develop and share knowledge for global lifesaving solutions. The organization translates knowledge from research into policy, using strategic health programs. This allows basic research to influence policy applications and actions rapidly if the evidence supports meaningful public-health benefit. Research priorities at icddr,b are cross-cutting, covering child health, infectious diseases and vaccine sciences, reproductive health, nutrition, population, HIV/AIDS, and safe water. The organization published several internal publications, journal, reports, and abstracts in 2013, which are listed in the annex.

James P. Grant School of Public Health, BRAC University

The James P. Grant School of Public Health (JPGSPH) under BRAC University was established in 2004 as an international educational and research institution focusing on the integral areas of teaching, research, and services. The goal of the School is not only to impart knowledge but also to act as a center of excellence in knowledge creation through research and training that connect with practice. Aside from the flagship educational programs, i.e. Masters of Public Health (MPH), JPGSPH also provides short courses on public health for health professionals through the Continuing Education Program (CEP). Additionally, JPGSPH possesses a burgeoning research portfolio conducting innovative and pioneering studies on public health issues funded by multiple international donors. JPGSPH also provides services in the form of training, advocacy workshops, and seminars with a special focus on the rights of the marginalized and vulnerable population of Bangladesh. The School serves as the secretariat for an initiative called Bangladesh Health Watch (BHW), a multi-stakeholder civil society advocacy and monitoring network dedicated to improving the health system in Bangladesh through critical review of policies and programs and recommendations of appropriate actions for change. The main activity of the Bangladesh Health Watch is to publish an annual report on the state of health in Bangladesh every year by commissioning researches. A working group consisting of researchers and activists from different organizations carry out various activities. The list of studies and publications of JPGSPH is provided in the annex.

Institute of Epidemiology, Disease Control and Research

The Institute of Epidemiology, Disease Control and Research (IEDCR) conducted quite a good number of studies in collaboration with national and international public health institutions and universities. It has also PhD researchers. All research activities and publications by IEDCR are listed in the annex.

National Institute of Cardiovascular Diseases

The National Institute of Cardiovascular Diseases (NICVD) has been conducting three postgraduate courses under the University of Dhaka/BSMMU. The courses are Masters of Surgery (MS-Cardiovascular & Thoracic Surgery), Doctor of Medicine (MD-Cardiology), and Diploma in Cardiology (D-Card). Each student of the final part courses for MS and MD has to submit a thesis for final examination to the relevant university. This work is done under the guidance of a professor of the relevant department. The list of research activities by NICVD is provided in the annex.

Institute of Child & Mother Health

The Institute of Child & Mother Health (ICMH) is a national-level institute in Bangladesh committed to being a center of excellence in the South-East Asia. The Institute is working for the improvement of health and nutrition of children and mothers in the country through its three objectives: human resource development, conducting research, and patient-care. This Institute was made autonomous through an Act in the Parliament in 2002 and is now administered through a Board of Governors. All research activities by ICMH are listed in the annex.

National Institute of Preventive & Social Medicine

The National Institute of Preventive & Social Medicine (NIPSOM), the only national-level public health institute under the University of Dhaka, Bangladesh, was established in 1978 with the aim to produce postgraduates in public health, capable of satisfying the needs of the community in promoting and restoring health. The Institute is also supporting various health policy formulations of the government and community health programs through research, training, and services. It conducts eight Masters of Public Health (MPH) courses, each of one-year duration and one M. Phil course of two-year duration. The list of NIPSOM's dissertations and research is given in the annex.

CHAPTER 16

HEALTH WORKFORCE SITUATION

More than six thousand physicians appointed in August 2014

Summary of information of the health workforce situation, particularly of DGHS and allied departments, viz. Directorate General of Family Planning, Directorate General of Drug Administration, and Directorate of Nursing Services is provided in this chapter. An overview of the number of sanctioned and filled-up posts, along with vacancies is presented; medical teaching/training institutions and programs, along with courses and training, have also been shown. Health workforce deployment and redeployment are ongoing processes; attrition due to death, retirement, resignation, termination, migration, transfer, replacement, and filling-in are constantly occurring. Therefore, the status of health workforce as shown in this report may not remain the same by the time this health bulletin is published.
In August 2014, 6,089 physicians were newly-appointed through the 33rd BCS examination. The entry-level posts of the physicians in health cadre (assistant surgeon/equivalent) have been saturated by this large-scale employment.

Overall health workforce situation of DGHS

Table 16.1 shows a summary of health workforce situation of the DGHS. A division-wise distribution is shown in the annex to this chapter.

It is revealed from Table 16.1 that, out of 123,916 sanctioned posts under DGHS, about half (42.55%) are of class III category, with physicians (class I) comprising 18.61%, class II comprising 16.49%, and class IV comprising 22.30%. Of the available 103,840 health personnel, 39.93% are of class III, 20.76% are doctors (class I), 18.23% are of class II, and 20.86% are of class IV. The class I non-doctors comprise 0.41% of the sanctioned posts and 0.22% of the available staff. Table 16.1 also shows that 20,076 sanctioned posts remained vacant as of August 2014, which constituted 16% of the total sanctioned posts. Vacancy rate was 7% (1,513 posts) for doctors, 21% (11,017 posts) for class III staff, 21% (5,766 posts) for class IV staff, 7% (1,497 posts) for class II staff, and 55% (283 posts) for class I non-doctors.

Table 16.1. Number of sanctioned, filled- up and vacant posts under DGHS (August 2014)

Class		Sanctioned No. (%)	Filled-up				Vacant	
			Male No. (%)	Female No. (%)	Total No.(%)	Filled-up as % of sanctioned posts	No.	%
Class I	Doctors	23066 (18.61)	15192 (23.93)	6361 (15.76)	21553 (20.76)	93	1513	7
	Non-doctors	514 (0.41)	185 (0.29)	46 (0.11)	231 (0.22)	45	283	55
Class II		20432 (16.49)	1337 (2.11)	17598 (43.61)	18935 (18.23)	93	1497	7
Class III		52477 (42.55)	30711 (48.38)	10749 (26.63)	41460 (39.93)	79	11017	21
Class IV		27427 (22.13)	16058 (25.29)	5603 (13.88)	21661 (20.86)	79	5766	21
Total		123916 (100.0)	63483 (100.0)	40357 (100.0)	103840 (100.0)	79	20076	16

Figure 16.1 shows the percentage distribution of male and female staff under DGHS as of August 2014. About two-thirds (61.14%) of the total available staff members (n=103,840) were male, and slightly more than one-third (38.86%) were female. Among the doctors (class I), 70.49% were male 29.51% were female. Class I non-doctors also had similar distribution (80.09% male vs 19.91% female). For the class II staff, completely a reverse

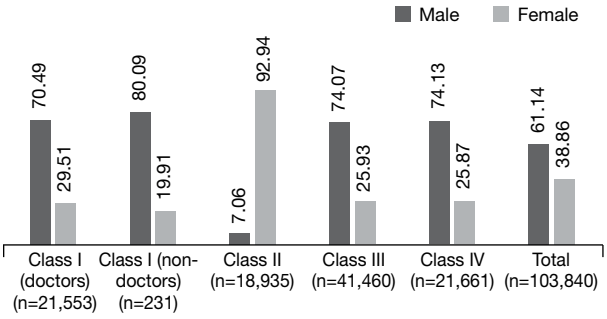


Figure 16.1 Percent distribution of male and female staff in DGHS (August 2014)

picture was seen (7.06% male vs 92.94% female); this was because of the fact that bulk of the class II staff comprised nurses and most of the nurses were female. Among the class III staff, 74.07% were male, and 25.93% were female. Among the class IV staff, 74.13% were male, and 25.87% were female.

Figure 16.2 shows the total number of sanctioned posts of DGHS in 2011, 2012, and 2013. Between 2012 and 2013, there was an increase of 7,981 posts comprising 1,401 class IV posts, 599 class III posts, 5,011 class II posts, 24 class I posts for non-doctors, and 946 class I post for doctors.

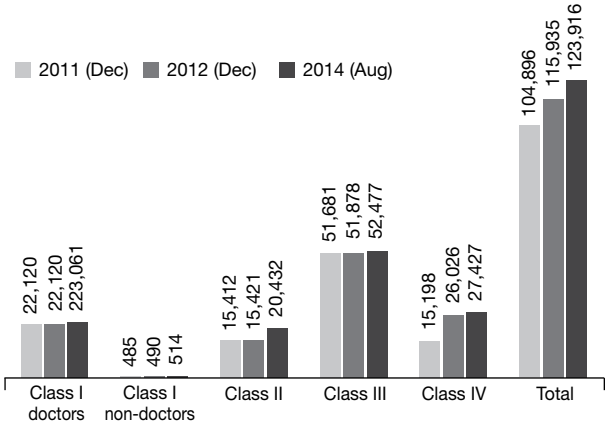


Figure 16.2. No. of sanctioned posts by year

Administrative, managerial, academic and clinical positions

Table 16.2 shows the number of sanctioned, filled-up and vacant posts at administrative, managerial, academic and clinical positions under DGHS in August 2014.

Table 16.2. Number of sanctioned, filled-up and vacant posts at administrative, managerial, academic and clinical positions under DGHS (August 2014)

Post	Sanctioned	Filled-up		Vacant	
		No.	Sanctioned (%)	No.	Sanctioned (%)
DG	1	1	100	-	0
ADG/equivalent	5	5	100	-	0
Director/principal/vice-principal/equivalent	102	94	92	8	8
Deputy director/equivalent	126	77	61	49	39
Assistant director/civil surgeon/equivalent	205	154	75	51	25
Deputy civil surgeon/UHFPO	511	498	97	13	3
Professor	590	324	55	266	45
Associate professor	899	542	61	353	39
Assistant professor	1332	852	64	480	36
Senior consultant	516	271	53	245	47
Senior lecturer	8	7	88	1	13
Junior lecturer	32	28	88	4	13
Junior consultant/equivalent*	3935	2431	62	1504	38

Table 16.2. continued

Post	Sanctioned	Filled-up		Vacant	
		No.	Sanctioned (%)	No.	Sanctioned (%)
Assistant surgeon/equivalent**	14485	15971	110	-1486	-10
Others post	319	251	79	68	21
Total	23066	21506	93	1561	7

*Filled-up posts include 549 junior consultants given promotion as current charge in August 2014
**Filled-up posts include additional doctors recruited in August 2014 under 33rd Bangladesh Civil Service

Table 16.3. Number of sanctioned, filled-up and vacant posts of medical technologists by discipline in three years

Year (Month)	Post	Pharmacy	Lab	Radiography	Radiotherapy	Physiotherapy	Dental	Sanitary Inspector	Total
2011 (Dec)	Sanctioned	2934	1990	715	57	201	531	-	6428
	Filled-up	2174	1613	635	38	147	498	-	5105
	Vacant	760	377	80	19	54	33	-	1323
2012 (Dec)	Sanctioned	2934	1990	715	57	201	531	-	6428
	Filled-up	2172	1610	634	38	147	495	-	5096
	Vacant	762	380	81	19	54	36	-	1332
2013 (Dec)	Sanctioned	2934	1922	737	66	216	535	491	6901
	Filled-up	2126	1498	629	41	144	501	436	5375
	Vacant	808	424	108	25	72	34	55	1526

Medical technologists

Table 16.3 shows the number of sanctioned, filled-up and vacant posts of medical technologists as in three years (2011, 2012, and 2013).

Figure 16.3 shows the percentage of vacancies among different disciplines of medical technologists under DGHS as of December 2013. Overall, 22.11% posts were vacant.

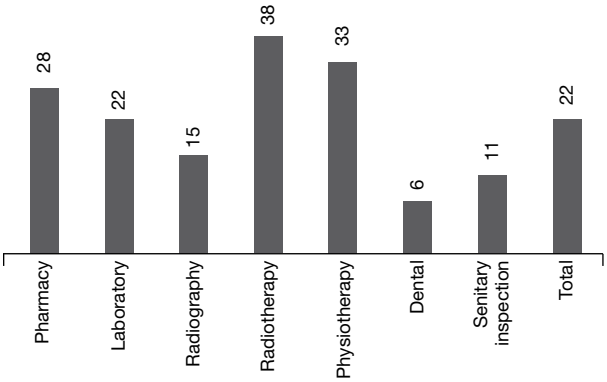


Figure 16.3. Percentage of vacancies among different disciplines of medical technologists under DGHS (December 2013)

Sub-Assistant Community Medical Officers

Table 16.4 shows the number of sanctioned, filled-up and vacant posts of Sub-Assistant Community Medical Officer (SACMO) in the three-year period (2011, 2012, and 2013) under DGHS. Percentage of vacancy has been reduced in 2013 to a figure of 9.13% from 22.2% in 2012.

Domiciliary staff (Health Inspectors, Assistant Health Inspectors, and Health Assistants)

Table 16.5 shows the number of sanctioned, filled-up and vacant posts of domiciliary staff (Health

Table 16.4. Number of sanctioned, filled-up and vacant posts of Sub-Assistant Community Medical Officer (SACMO) in the three-year period (2011, 2012, and 2013) under DGHS

Year (Month)	No. of posts			Vacancy (%)
	Sanctioned	Filled-up	Vacant	
2011 (Dec)	5411	4216	1195	22.1
2012 (Dec)	5411	4212	1199	22.2
2013 (Dec)	5411	4917	494	9.13

Table 16.5. Number of sanctioned, filled-up and vacant posts of domiciliary staff (Health Inspectors, Assistant Health Inspectors, and Health Assistants) under DGHS in the three–year period (2011, 2012, and 2013)

Year (Month)	Post	Health Inspector	Assistant Health Inspector	Health Assistant	Total field staff	Vacancy (%)
2011 (Dec)	Sanctioned	1399	4198	20815	26412	8.8
	Filled-up	1132	3669	19279	24080	
	Vacant	267	529	1536	2332	
2012 (Dec)	Sanctioned	1399	4198	20815	26412	8.9
	Filled-up	1126	3662	19274	24062	
	Vacant	273	536	1541	2350	
2013 (Dec)	Sanctioned	1399	4202	20881	26482	16.75
	Filled-up	1313	4042	16690	22045	
	Vacant	86	160	4191	4437	

Inspectors, Assistant Health Inspectors, and Health Assistants) under DGHS in the three–year period (2001, 2011, and 2012). The rate of vacancy is 16.75%.

Officers and staff in alternative medicines

Table 16.6 shows the number of sanctioned, filled-up and vacant posts of various officers and staff in alternative medicines under DGHS as of December 2013.

Directorate General of Family Planning

Table 16.7 shows the number of sanctioned, filled-up and vacant posts under the Directorate General of Family Planning (DGFP) in the three–year period (2010, 2011, and 2013).

Directorate of Nursing

Table 16.8 shows the number of sanctioned, filled-up and vacant posts under the Directorate of Nursing Services (DNS) in the three–year period (2010, 2011, and 2013).

Directorate General of Drug Administration

Table 16.9 shows the number of sanctioned, filled-up and vacant posts under the Directorate General of Drug Administration (DGDA) in the three-year period (2010, 2011, and 2013. The vacancy for class I officers has been significantly dropped in 2013.

Institutions offering postgraduate medical degrees

Table 16.10 shows the number of institutions both in the government and private sectors providing postgraduate medical degrees. Thirty-three institutions—23 in public sector and 10 in private sector—offer such degrees. The table also shows the titles of the courses offered by each institution, along with the number of seats in each course. This report is based on information provided by Director, Medical Education, as of December 2011. One institution—Bangladesh College of Physicians and Surgeons (BCPS)—offers FCPS (Fellow of the College of Physicians and Surgeons) and MCPS (Member of the College of Physicians and Surgeons) degrees.

Table 16.6. Number of sanctioned, filled-up and vacant posts (revenue and development) of various officers and staff in alternative medicines under DGHS (December 2013)

Name of post	Sanctioned post		Fill-up post		Vacant post	
	Revenue	Development	Revenue	Development	Revenue	Development
Medical officers for unani medicine	51	122	-	15	51	90
Medical officers for ayurvedic medicine	51	122	-	15	51	90
Medical officers for homeopathic medicine	51	113	-	15	51	90
Compounders for alternative medicine	153	334	-	64	153	270
Herbal assistants for herbal gardens	-	467	-	467	0	0
Total	**306**	**1158**	-	**576**	**306**	**540**

Table 16.7. Number of sanctioned, filled-up and vacant posts under DGFP in the three–year period (2010, 2011, and 2013)

Year (Month)	Class	Sanctioned	Filled-up	Vacant	Vacancy (%)
2010 (Jun)	Class I	1925	1242	683	35.5
2011 (Dec)		1954	1049	905	46.3
2013 (Apr)		1954	1021	933	47.7
2010 (Jun)	Class II	1023	446	577	56.4
2011 (Dec)		1022	401	621	60.8
2013 (Apr)		1074	401	673	62.7
2010 (Jun)	Class III	40430	38906	1524	3.8
2011 (Dec)		16937	14646	2291	13.5
2013 (Apr)		16886	14760	2126	12.6
2010 (Jun)	Class IV	8959	8044	915	10.2
2011 (Dec)		32507	29845	2662	8.2
2013 (Apr)		32516	29103	3413	10.5

Table 16.8. Number of sanctioned, filled-up and vacant posts under the DNS in the three-year period (2010, 2011, and 2013)

Year (Month)	Category	Sanctioned	Filled-up	Vacant	Vacancy (%)
Class I					
2010 (Jun)	Nursing	161	6	155	96.3
	Non-nursing	1	-	1	100.0
2011 (Dec)	Nursing	171	2	169	98.8
	Non-nursing	1	-	1	100.0
2013 (Jun)	Nursing	174	1	173	99.4
	Non-nursing	1	-	1	100.0
Class II					
2010 (Jun)	Nursing	463	150	313	67.6
	Non-nursing	20	8	12	60.0
2011 (Dec)	Nursing	16207	14041	2166	13.4
	Non-nursing	20	7	13	65.0
2013 (Jun)	Nursing	21052	12609	8443	40.1
	Non-nursing	20	7	13	65.0
Class III					
2010 (Jun)	Nursing	16559	13327	3232	19.5
	Non-nursing	353	214	139	39.4
2011 (Dec)	Nursing	1375	837	538	39.1
	Non-nursing	353	202	151	42.8
2013 (Jun)	Nursing	1375	625	750	54.5
	Non-nursing	358	204	154	43.0

Table 16.8. continued

Year (Month)	Category	Sanctioned	Filled-up	Vacant	Vacancy (%)
Class IV					
2010 (Jun)	Non-nursing	704	633	71	10.1
2011 (Dec)	Non-nursing	863	620	243	28.2
2013 (Jun)	Non-nursing	863	614	249	28.9

Table 16.9. Number of sanctioned, filled-up and vacant posts under DGDA in the three-year perid (2010, 2011, and 2013)

Class	Year (Month)	Sanctioned	Filled-up	Vacant	Vacancy (%)
Class I	2010 (Jun)	118	28	90	76.3
	2011 (Dec)	118	27	91	77.1
	2013 (Dec)	118	77	41	34.75
Class II	2010 (Jun)	25	7	18	72.0
	2011 (Dec)	25	7	18	72.0
	2013 (Dec)	25	4	21	84.0
Class III	2010 (Jun)	115	58	57	49.6
	2011 (Dec)	115	55	60	52.2
	2013 (Dec)	115	56	59	51.30
Class IV	2010 (Jun)	112	39	73	65.2
	2011 (Dec)	112	40	72	64.3
	2013 (Dec)	112	35	77	68.75

Table 16.10. Type of institutions offering postgraduate medical courses, with number of seats (December 2012)

Type of organization	No. of organizations	No. of seats							
		MS	MD	M. Phil	Diploma	MPH	MTM	MMED	Total
Government (BSMMU)	1	140	**150**	**70**	**106**	0	10	0	**477**
Government	22	312	**360**	**242**	**478**	185	0	15	**1614**
Private	10	21	**38**	**15**	**95**	0	0	0	**169**
Total	33	473	**548**	**327**	**679**	**185**	**210**	**15**	**2270**

Any eligible candidate can sit for the examinations, and results depend on the candidate's competence shown in the examinations. The number of seats is, therefore, variable. Other institutions offer courses, like MS, MD, M.Phil, Diploma, MPH, MTM, and MMED. The number of seats is shown in Table 16.10. The detailed list of the organizations with courses and number of seats is shown in the annex.

Figure 16.4 shows the number of doctors who obtained FCPS and MCPS degrees from the Bangladesh College of Physicians and Surgeons (BCPS) from 2007 to 2013. Detailed data are given in the annex.

Institutions offering graduate medical degrees

Table 16.11 shows the number of institutions, along with total number of seats both in the government and private sectors, which offer MBBS degrees. Detailed list of institutions, with number of seats in each, is provided in the annex.

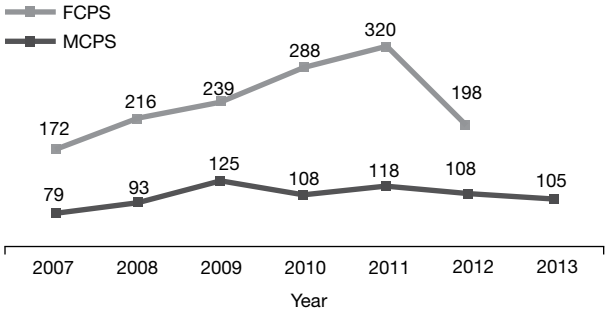


Figure 16.4. Number of FCPS and MCPS postgraduates by year

Table 16.11. Government and private institutions offering MBBS degree, with number of seats (December 2013)

Type of organization	No. of institutions	No. of seats
Government	29	**3176**
Private	55	**4850**
Total	84	**8026**

Institutions offering undergraduate dental degrees

Table 16.12 shows the number of institutions, along with the total number of seats both in the government and private sectors, which offer BDS degrees. Detailed list of institutions, with number of seats in each, is provided in the annex.

Table 16.12. Government and private institutions offering BDS degrees, with number of seats (December 2013)

Type of organization	No. of institutions	No. of seats
Government	9	532
Private	18	1065
Total	27	**1597**

Institutions offering degrees and diplomas in alternative medicines

Table 16.13 shows the list of academic institutions, along with the number of seats, both in the government and the private sectors, offering degrees and diplomas in alternative medicines.

Institutions offering nursing degrees

Table 16.14 shows the number of institutions, along with the number of seats, in both government and private sectors, offering different types of nursing degrees. Detailed list of institutions and the number of seats in each institution are shown in the annex.

Institutions to produce midwives

There are 12 junior midwifery institutions in the private sector, with total seats of 320, to produce midwifery professionals (18-month course). Table 16.15 shows the list.

Table 16.13. Institutions for teaching and training of alternative medicines in Bangladesh

Name of institution	Total	Govt.	Private	Duration of course	Duration of internship	Degree offered	No. of seats
Govt. Unani and Ayuevedic Medical College	1	1	0	5 years	1 year	BUMS (Bachelor of Unani Medicine and Surgery); BAMS (Bachelor of Ayuevedic Medicine and Surgery)	50
Homeopathic Medical College	2	1	1	5 years	1 year	BHMS (Bachelor of Homeopathic Medicine and Surgery)	50
Tibbia College/ Unani Diploma College	12	1	11	4 years	6 months	DUMS (Diploma in Unani Medicine and Surgery)	25*
Ayurvedic Diploma College	8	0	8	4 years	6 months	DAMS (Diploma in Ayurvedic Medicine and Surgery)	-
Homeopathic Diploma College	41	0	41	4 years	6 months	DHMS (Diploma in Homeopathic Medicine and Surgery)	-
Total	64	3	61				

*Only in government institutions

Table 16.14. Number of nursing institutions, along with the number of seats, offering different types of nursing degrees (December 2013)

Course	Ownership	Affiliation	No.	Seats
BSc	Government	MOHFW	7	700
		Armed Forces Medical Institute, Dhaka Cantonment, Dhaka	1	60
		Faculty of Nursing BSMMU, Dhaka	1	25
		Sub-total (Government)	**9**	**785**
	Private	Private (one institution has been closed)	13	430
		Sub-total (BSc in Nursing)	**22**	**1215**
Post-basic BSc	Government	Under MOHFW	4	500
	Private	Private	10	345
		Sub-total (Post-basic BSc in Nursing)	**14**	**845**
Specialized	Private	Private	4	80
		Sub-total (Specialized education in Nursing)	4	80
Diploma	Government	MOHFW	43	2580
		Armed Forces Medical Institute	1	50
		Sub-total (Government)	44	2630
	Private	Private	47	1910
		Sub-total (Diploma in Nursing)	91	4540
		Total	**131**	**8740**

Training facilities for production of community-based skilled birth attendants

To facilitate attendance at childbirths by skilled health personnel, the Ministry of Health and Family Welfare has a program to produce community-based skilled birth attendants. There are 47 facilities–45 in the government sector and 2 in the private sector to provide such training. Table 16.16 shows the location of the training facilities.

Table 16.15. Junior midwifery institutions, with number of seats in each (December 2013)

Division	Name of junior midwifery institution	No. of seats
Chittagong	1. Junior Midwifery Institute, Red Crescent Matrisadan Hospital, Chandpur	20
	2. Jemison Red Crescent Midwifery Institute, Agrabad, Chittagong	50
	3. Christian Hospital, Chandroghona, Rangamati	20
	4. Junior Midwifery Institute, Memon Hospital, City Corporation, Chittagong	30
Dhaka	5. Junior Midwifery Institute, Holy Family Red Crescent Hospital, Dhaka	60
	6. Junior Midwifery Institute, Shaheed Moyez Uddin Memorial Red Crescent Matrisadan Hospital, Bangla Bazar, Dhaka	20
	7. Junior Midwifery Institute, Kumudini Hospital, Mirzapur, Tangail	20
	8. Central Hospital Nursing Institute, Green Road, Dhanmondi, Dhaka	20
Khulna	9. Junior Midwifery Institute Ad-Din Matrisadan Hospital, Jessore	20
	10. Junior Midwifery Institute, Fatema Hospital, Jessore	20
Rajshahi	11. Junior Midwifery Institute, Christian Hospital, Bogra	20
Rangpur	12. Prime Nursing College, Rangpur	20
	Total seats	**320**

Table 16.16. Training institutions for production of community-based skilled birth attendants (December 2013)

Ownership	Type of facility	Location	No. of facilities
Government	CSBA Institution run by civil surgeon and attached with general hospital/district hospital	ICMS, Matuail, Dhaka. Narayanganj (WHO), Manikganj, Kishoreganj, Jamalpur, Habiganj, Gopalganj, Narsingdi, Nilphamari, Natore, Naogaon, Kurigram, Panchagarh, Gaibandha, Jhenaidah, Bagerhat, Rajbari, Madaripur, Munshiganj, and Chandpur	20
	Family Welfare Visitor Training Institute	Tangail (WHO), Barisal, Faridpur, Comilla (WHO), Kushtia, Sylhet, Rangamati, Dhaka, Rajshahi, Bogra and Khulna (WHO)	11
	CSBA Institution attached with nursing institutions	Noakhali, Jessore, Satkhira, Thakurgaon, Feni, Joypurhat, Pabna, Brahmanbaria, Netrakona, Chuadanga, Cox's Bazar, Patuakhali, Chapainowabganj, Rangpur, Dinajpur, and Sirajganj	16
Private	CSBA Institution	Kumudini Hospital, Mirzapur, Tangail; Lamb Hospital, Parbotipur, Dinajpur; Christian Hospital, Chandragona, Rangamati; OGSB Hospital, Mirpur, Dhaka; Modal Family Planing clinic, Rangpur	5
		Total	52

Training schools for production of medical assistants

Medical assistants (now to be designated as Sub-Assistant Community Medical Officer) assist the medical doctors posted at health facilities at the upazila health complex level and below. Medical assistants are produced by Medical Assistant Training School (MATS) through a three-year academic course comprising theoretical and practical classes. Currently, there are 8 MATS in the government sector and 134 MATS in the private sector (total 142). Total annual production-capacity is 9,241, of which 716 are produced by the government MATS and 8,525 by the private MATS (Table 16.17). Detailed list of institutions, with the number of seats in each institution, is shown in the annex.

Table 16.17. Government Medical Assistant Training Schools (MATS), with the number of seats (December 2013)

Ownership	No. of MATS	No. of seats
Government	8	716
Private	134	8525
Total	142	9241

Institutes of Health Technology (IHT) for production of medical technologists

Medical technologists are laboratory technologists or staff responsible for technical jobs under the supervision of medical experts. There was an acute shortage of medical technologists in the country. However, a steady growth of private institutions has been noticed and, by now, there are 112 institutions (Table 16.18). Eleven government

Table 16.18. Number of institutions of health technology, along with the number of seats (December 2013)

Ownership	Type of course	No. of institutions	Discipline	No. of seats
Government	Diploma	8	Lab; Radiology; Physiotherapy; Sanitary inspection; Dentistry; and Radiotherapy *Note: Offspring of freedom fighters and tribal students have 41 reserved seats*	2419
Private	Diploma	82	Lab; Radiology; Physiotherapy; Sanitary Inspection; Dentistry; Pharmacy; and Radiotherapy *Note: Offspring of freedom fighters and tribal students have reserved seats*	10231
Government	BSc	3	Lab; Physiotherapy; and Dentistry	265
Private	BSc + MSc	15	Lab; Physiotherapy; Dentistry; and others	1160
			Total (diploma + BSc + MSc)	14075
Government + Private	Certificate	4	Optometrist, refraction, ophthalmic assistant, ophthalmic nursing assistant, cath lab technician	180
	Total	112	Grand total	14255

institutions and 97 private institutions offer diploma and/or BSc/MSc courses. Four institutions (government plus private) offer certificate course in medical technology. The total number of seats in diploma, BSc and MSc courses is 14,075 and that for certificate course is 180. The two have a grand total of 14,255 seats. The detailed list of IHTs, along with the number of seats in each, is given in the annex.

On-the-job training

Under the Operation Plan of In-service Training, a large number of health personnel and support staff receive on-the-job training each year. A summary of the types of training programs and the number of participants in these training programs is given in Table 16.19. Details of on-the-job training are provided in the annex.

Yearly output from medical and dental colleges of Bangladesh

Table 16.20 shows year-wise number of new doctors produced from various medical and dental colleges of Bangladesh.

Table 16.19. Number of participants in on-the-job training given under Operational Plan of In-service Training in FY 2011-2013

Area/subject of the training/ workshop/seminar	Duration	No. of batches	No. of participants
Local training (short-term)			
Essential service delivery		653	16165
Management training		442	9867
Sub-total		1095	26032
Overseas training			
Different clinical specialties	1 week to >6 months	131	3175
Different management and public health specialties	1 week to >6 months	0	28
Specialized overseas training/exchange visit	1-4 week(s)	0	41
Sub-total		38	561
Total		1257	28226

Table 16.20. Year-wise number of new doctors produced

Name of medical or dental college	No. of students graduated						
	2008	2009	2010	2011	2012	2013	Total
Dhaka Medical College	207	147	132	178	202	195	1061
Sir Salimullah Medical College	153	155	146	170	167	220	1011
Rajshahi Medical College	147	139	170	164	205	208	1033
Rangpur Medical College	83	-	185	23	214	131	636
Mymensingh Medical College	124	162	184	155	207	212	1044
Chittagong Medical College	125	142	181	147	225	174	994
M.A.G. Osmani Medical College, Sylhet	127	161	160	155	203	203	1009
Sher-e-Bangla Medical College	136	143	166	164	190	201	1000
Faridpur Medical College	42	59	59	60	117	108	445
S.Z.R. Medical College, Bogra	46	-	56	93	130	121	446
Dinajpur Medical College	41	50	52	75	119	83	420
Khulna Medical College	47	61	46	80	116	119	469
Comilla Medical College	40	52	60	49	147	115	463
Dhaka Dental College	69	79	97	129	84	132	590
Chittagong Dental College	-	18	36	59	43	38	194
Rajshahi Dental College	-	37	33	13	47	46	176
Total	1387	1405	1763	1714	2416	2306	10991

CHAPTER 17

HEALTH INFORMATION SYSTEM: eHEALTH AND MBT

Innovative digital approaches drawing more attention of the international community

In April 2014, the MIS-DGHS completed Internet connectivity to all the community clinics and community health workers. The community clinics were given laptops, and the community health workers were given handheld tablet devices. The formal distribution ceremony was held on 2 April 2014, with the main national event at MIS-DGHS head quarter in Dhaka and sub-national programs in all upazila health offices. The Honorable Minister for Health and Family Welfare Mohammed Nasim, MP; Honorable State Minister for Health and Family Welfare Zahid Maleque, MP; and Director General of Health Services Professor Dr Deen Mohd. Noorul Huq launched the distribution in the national event. The whole program was live-telecast though the Internet. Earlier in July 2013, Honorable Prime Minister Sheikh Hasina inaugurated the distribution of the above. This connectivity created a new era of the population-based data collection and analysis through routine health information system for correctly understanding, planning, intervening, and reviewing the actual health problems prevailing at the community level.From 23 to 24 June 2014, MIS-DGHS organized a big eHealth event in Dhaka, namely the First South Asia Regional Conference on Health Informatics. The conference was sponsored by WHO headquarters, GiZ, and UBS Optimus Foundation. Held in Ruposhi Bangla Hotel, this conference brought together speakers and experts in the health informatics and mHealth, who represented local, regional, and global organizations. They discussed current innovations, national policies, donors' views on funding for mHealth and health informatics projects, public-private partnerships, and infrastructure and policy issues regarding scale-up. The eHealth and mHealth projects by the MIS-DGHS have been specially show-cased and well-appreciated. Mr. Sajeeb Wajed Joy, Honorable Adviser to the Prime Minister provided keynote speech in one of the sessions.

This chapter discusses current situation and progress of various HIS and eHealth programs of MIS-DGHS. The HIS-EH operational plan has three components, viz, Health Information System, eHealth and Medical Biotechnology (MBT). This chapter also makes an overview of medical biotechnology (MBT).

Momentum to COIA Initiative

The health information system of MIS-DGHS collects data from various sources and cleans, analyzes, and summarizes the data to generate and distribute information through

Mr. Sajeeb Wajed Joy, respectable Adviser to Honorable Prime Minister Sheikh Hasina is seen giving the keynote speech at the First South Asia Regional Conference on Health Informatics held in Dhaka from 23 to 24 June 2014

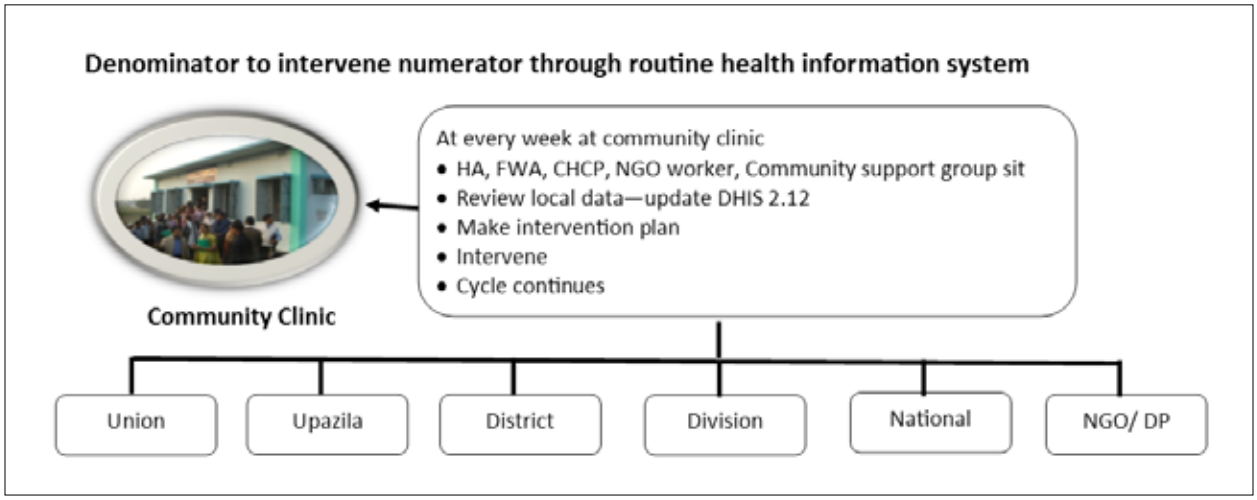


Figure 17.1. The COIA framework for registering and tracking every pregnant woman and every under-five child

routine administrative reports, website, health bulletins, newsletters, etc. Data are collected electronically, covering all health facilities and health administrative points from national to the community level. The community clinics and community health workers have been provided with laptop computers and android tablet devices. An initiative has been undertaken to register and track every pregnant mother and under-five child, using 11 core indicators (see annex to this chapter) suggested by the Commission on Information and Accountability (COIA) of the United Nations, of which the WHO is one of the key partners. The WHO has undertaken an initiative to measure the progress, real time, of MDG 4 and 5 through using 11 COIA indicators in 75 countries, including Bangladesh. This would need to reach the MDG 4 or 5 targets by 2015. Bangladesh is receiving technical assistance from WHO headquarters to pilot this initiative. In 2014, a COIA secretariat has been established to monitor COIA programs country wide. This created new momentum in COIA activities. This collaborative initiative has brought together partners from MOHFW (HIS-EH, CBHC, MNCAH-DGHF, MCH-DGFP, MIS-DGFP), DPs (WHO, UNICEF, UNFPA, JICA, SAVE, USAID-MaMoni, icddr,b, Plan International) and NGOs (BRAC, CIPRB, etc.) for a common goal. Figure 17.1 describes the COIA work modalities.

Community health workers and community clinics are registering every pregnant woman and every under-five child living in the respective community catchments, using this form online. A routine weekly meeting is being held in the community clinic, where the government community health workers (CHCP, HA, and FWA), NGO healthcare workers, and members of the community clinic management committee and community support group, review the local maternal and child health data, if required clean and further update; make intervention plan for the next week and implement the plan. This routine cycle (Figure 17.2) continues to track, follow-up, and improve maternal and child health.

Population register for lifetime shared health records of citizens–basic soft data nearly ready for use

The MIS-DGHS completed data capture for the electronic health records of citizens. As MOHFW has primary healthcare staff only in the rural area, start-up data were collected only from rural area. Currently, we have 98 million individual electronic records. These data, which comprise basic health-records of the citizens, will make the foundation of future lifetime shared health-records. With technical assistance from DFID, a software consortium comprising both local and non-local IT houses is now engaged in developing an integrated national eHealth enterprise architecture (eHEA) (Figure 17.2) that will combine individual records of all citizens, lifetime health records, registries of organizations, information on public health programs (DHIS 2.12), hospital information system (Open MRS), health workforce registry (HRIS), and inventory system for major equipment to virtually function as one system through a data exchange mechanism, popularly known as Electronic Health Information Exchange (eHIE). All hospitals, no matter public or private, will have the ability to post records of each patient to the national data warehouse through

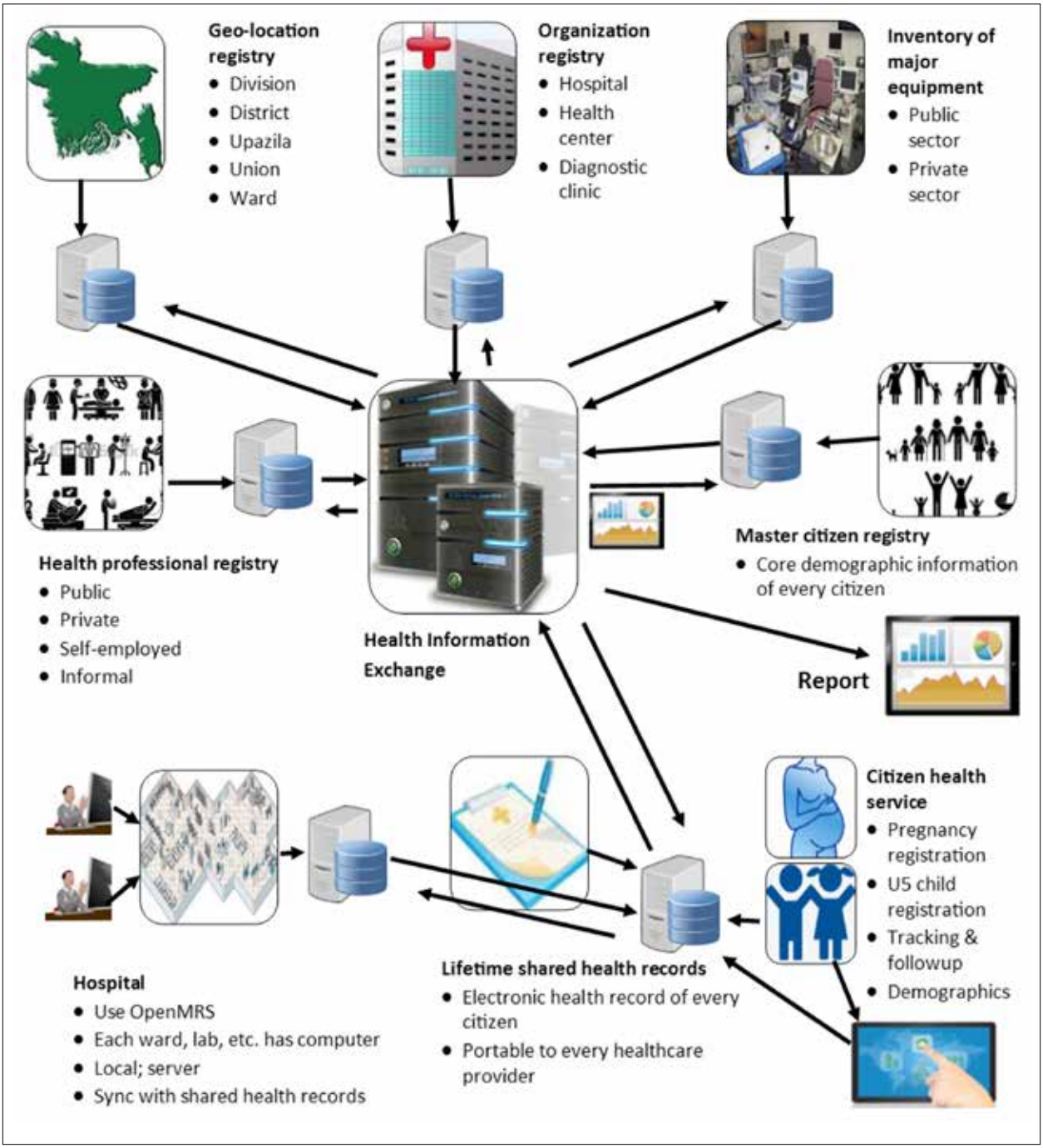


Figure 17.2. Proposed design of the eHealth Enterprise Architecture which is being developed with technical assistance from DFID

eHEA. Work is rapidly progressing and the first usable version will be ready within one year. The eHEA will work in unison with the electronic Civil Registration and Vital Statistics System and National Population Register System. Recently, much progress has been achieved in developing a common electronic national population register system, combined with universal CRVS system. An inter-ministerial BBS, along with law, election commission, primary education, etc. is working to make this common platform emerge. The WHO, UN-ESCAP, WB, CIDA, UNICEF, UNFPA, Plan International, etc. are promoting support towards this goal.

National eHealth Policy and Strategy

There is a growing international effort to develop long-term country-specific vision, goal, policy, and strategy for eHealth. To keep pace with global trend, MIS-DGHS completed preparation of drafts of the National eHealth policy and strategy with technical assistance from DFID. It is expected that by the end of 2014, these drafts will be finalized.

Improved data storage capacity and security of national health data center

For the planned future integrated and large-scale national eHealth enterprise architecture, the MIS-DGHS requires a robust, highly–secured, and never-sleeping data center with plenty of storage space. Such a world-class state-of-the-art data center already exists at the MIS-DGHS. The data center is equipped with RAID servers, firewalls, VM ware, underground cable system, automatic fire protection and humidity control, four tiers of power supply system, anti-spy and anti-hacking system to prevent unauthorized entry, remote monitoring system, text alerts by mobile phone, etc. As an ongoing effort made recently, data-storage capacity and data-security environment of the data center have been further improved. In addition to multiple methods of existing data back-up system, there is also a data disaster recovery system in Khulna, 400 kilometers away from the main data center in Dhaka.

Strengthening local information culture

Local Health Bulletins have been well-appreciated. Annual MIS Conference is helping improve data quality of Local Health Bulletins and DHIS 2.12 (Figure 17.3). Publication of online Local Health Bulletins by each health organization under DGHS is a remarkable milestone of MIS-DGHS, which is continuing from fiscal 2011-2012. The Annual MIS Conferences for fiscal 2013-2014 were held in June 2014. About 550 health organizations at all levels (national and subnational down to upazila) published their respective health bulletins online, using the web-based template provided by MIS-DGHS. These Local Health Bulletins are accessible through MIS-DGHS website (www.dghs.gov.bd). Thanks to our talented developer who created a reporting tool of data summary that enables display of aggregate reports interactively by geographic location or by type of organization. At the organization level, the respective copies of Local Health Bulletins, are printed, duplicated to make multiple copies, and a local publication ceremony is organized. This creates an indirect pressure on the local authority to remain careful about data quality because, in the ceremony, they have to answer about the conflicting data. For further improvement in data quality, the MIS-DGHS organizes Annual MIS Conference where all local health managers, local MIS focal points, and local statistical staff as well as technical experts from MIS-DGHS, development partners, and major NGOs remain present. In the Annual MIS Conference, open discussion and critical expert and peer-review are held on Local Health Bulletins on year-wise case-by-case basis. Experts provide feedback and technical guidance to the local authorities to improve data and reporting quality of the respective Local Health Bulletins. In respective divisional headquarters, the Annual MIS Conferences for health organizations and hospitals under the divisions (divisional, district and upazila levels) were held. So, there were seven divisional Annual MIS Conferences outside Dhaka. In Dhaka, the Annual MIS Conference for all the tertiary hospitals in the country was held in 2013. In total, eight Annual MIS Conferences were held. Local Health Bulletins 2013 have new elements, viz. exhaustive report on equipment, morbidity, and mortality, using ICD 10 (International Classification of Diseases, version 10) codes. Local Health Bulletins are increasingly drawing attention of the senior policy-makers and development partners as a source of subnational health data for making location-specific plans and decisions.

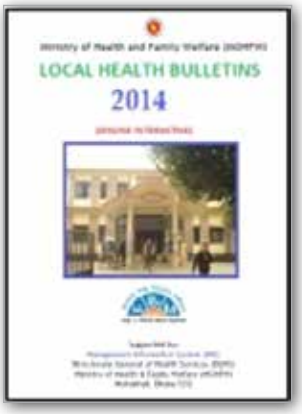


Figure 17.3. Each health organization publishes an online Local Health Bulletin

Human resource information system (HRIS)—improvement ongoing

The need of detailed human resource information is increasingly being felt for making long-term human resource plan, production, placement, and management. It is felt that it is important to know information on the health workforce of MOHFW and of other ministries and the private sector, inclusive of on-the-job and self-employed ones. The HRIS should include even informal healers as a reasonable number of people in Bangladesh consult informal healers for healthcare. Making and maintaining an integrated HRIS in Bangladesh is a challenging task as the existing human resource management processes among different ministries, agencies, and organizations are diverse and are managed by hundreds of national and subnational authorities. Standardization and harmonization of data will be a fundamental requirement for managing the HRIS through a single inter-operable electronic system. Currently, several vertical HRISs are being operated

by different agencies of MOHFW. The systems are not inter-operable for using different definitions of data and coding for the same data-elements; none of these can track relationship between sanctioned and filled-up posts; none of these have health workforce information of other ministries or of the private sector. All HRISs are updated at periodic interval by the respective health organizations and suffer inadequate compliance. Therefore, the existing systems are incapable of satisfying full and timely need of human resource information. For a solution, MIS-DGHS has developed an iHRIS (Integrated Human Resource Information System) as building block of a future large-scale integrated national eHealth Enterprise Architecture (eHEA). MIS-DGHS reviewed several globally-renowned human resource software, viz. iHRIS, Orange HRM, etc. However, these software did not appear suitable to manage the complexities and diversities of health workforce management processes at MOHFW and other organizations. In this context, our developers built own customized system as building-block of the national eHEA. Data were imported from the existing legacy databases–HRISs. Sanctioned posts of DGHS countrywide are already entered in the new system. This system meets international standards and inter-operability framework and is ready for capturing health workforce data under any ministry, agency, sector, or organization, inclusive of self-employed care providers and informal healers incrementally. The software is capable of producing disaggregated report of any type. The software has been built on the framework of process automation so that all human resource information can be updated at real time as the process will happen. However, making a good software or system is not all—the implementation by strong policy support will be the key to yielding results of the new iHRIS. Attention is growing to use this software for national HR management system.

The procurement portal of MOHFW is in full use

The procurement portal of MOHFW, built with technical assistance from Management Sciences for Health (MSH) supported by USAID, is in full use by now. All procurements under HPNSDP 2011-2016, begining from fiscal 2013-2014 are being done by the online procurement portal through shared use by Line Directors, MOHFW, CMSD, and World Bank. The experience of fiscal 2013-2014 shows that the system signicantly reduced length of overal procurement time.

Monthly and annual reporting for Cabinet Division

The MIS-DGHS provided routine monthly and annual report to Cabinet Division of the Government of Bangladesh, using the standard proforma. The report contains exhaustive information items on overall health sector.

Data on different health programs and organizations

In addition to the routine data from various organizations and health facilities, the MIS-DGHS collected specific program and performance-related data from Community Clinics (CCs); Essential Service Delivery (ESD); Maternal, Neonatal, Child and Adolescent Health (MNCAH); Communicable Disease Control (CDC), Non-communicable Disease Control (NCDC); National Nutrition Service (NNS); National Tubeculosis Control Program (NTP); and from organizations and agencies, such as Institute of Epidemiology, Disease Control and Research (IEDCR); Institute of Public Health (IPH); National Institute of Preventive and Social Medicine (NIPSOM); postgraduate teaching institutes and hospitals; Directorate General of Family Planning (DGFP); Directorate General of Drug Administration (DGDA); Directorate of Nursing Services (DNS); and from a number of non-government organizations. This Health Bulletin summarizes those data.

Data collection on shared software resource and use

One of the successes of our HIS initiatives is to increase convergence of all vertical programs or line directors to use our shared resource (data center and DHIS 2.14) for collection of program data. The shared data include those from community clinics collected by Community Clinics Project; data on obstetric care, IMCI, and EPI by MNCAH; data on tuberculosis by Tuberculosis Control Program; data on malaria, kala-azar, rabies by CDC; data on HIV/STD by NASP and partners; data on nutrition by NNS; data on pregnancy and under-5 child-tracking by Community Clinics Project, DGFP, MNCAH, NNS, NGOs and DPs; data on cervical cancer and breast cancer screening by an MOHFW-supported program based in BSMMU; data on obstetric fistula screening and care by National Fistula Program; data on neonatal health surveillance program by BSMMU; urban health data managed by DMIS, etc. MIS-DGHS is helping IEDCR in customizing DHIS 2.14 for disease surveillance. The list is growing further. Moreover, MIS-DGHS has developed a Progress Monitoring software under Annual Develpment Program (ADP) for MOHFW, which is now being used routinely by all line directors and MOHFW, and also by MOF and WB through i-bus.

Improving GIS-based data reporting

In the growing list of geo-spatial data, which were earlier up to upazila level, the MIS-DGHS collected geo-spatial data of all community clinics with

cooperation from Community Clinics Project in the last fiscal year. The MIS-DGHS has given more attention to improving GIS (geographical information system)-based reporting through its website. In the DHIS2 software, union boundary maps have also been added, along with division, district and upazila boundary maps.

Social media portals in DGHS website further promoted

The website of MIS-Health remains a vibrant platform for information dissemination as a focal point for the DGHS. Social media portals, viz. Facebook, Twitter, Google+, YouTube Channel, etc. have been further promoted.

Dissemination of information and publications

Several seminars and discussions were held to disseminate information and progress. Annual MIS Conference 2014, held in eight locations (seven in divisions and one in MIS-DGHS office), were attended by more than 2,000 health managers, MIS focal points, statisticians, and experts from across the country. Print and electronic media featured our success stories a number of times. Social media channels have been promoted. All the MIS-DGHS publications have been circulated through web portal.

eHealth

The MIS-DGHS uses the term 'eHealth' to describe health services to citizens delivered through the use of ICT. Like the HIS, the eHealth service being provided by MIS-DGHS has also seen new dimensions as described below.

Mobile phone health service being rolled out

The mobile phone health service, being provided by each upazila health complex and each district hospital (grand total 482), has been continued as a sustainable service. Each of the hospitals has a mobile phone which an on-duty doctor carries and is accessible for incoming calls round-the-clock. People living in the catchment areas call the doctor, if need arises, and the doctor answers to give appropriate medical advice. The service is free of charge. The service could be more helpful if rolled out further down to health workers who live close to the people's houses. Given this context, the community healthcare providers (CHCPs) are being engaged to provide mobile phone health service. As of now, about 13,000 community clinics were running, and each by a CHCP. The mobile phone health service received recognition through ICT4 Development Award (2010) and special mention in Manthan Award (2011) of India.

Telemedicine—15 new centers added in fiscal 2013-2014

In fiscal 2009-2010, equipment for 8 telemedicine centers and one coordination center at MIS-DGHS were procured, resulting in setting up of telemedicine centers in 8 hospitals of Bangladesh. Honorable Prime Minister of Bangladesh Sheikh Hasina formally inaugurated the telemedicine service on 6 July 2011 from the National Digital Innovation Fair held in Bangabandhu Novo-theater. In 2012, ten more telemedicine centers in 10 different hospitals were opened. In 2013, another 10 new telemedicine centers were established in 10 different hospitals. In fiscal 2013-2014, additional 15 telemedicine centers were added. Therefore, current number of telemedicine centers is 43. These telemedicine centers are equipped with high Internet bandwidth, large screen display, good-quality telemedicine camera, and telemedicine peripherals.

All rural citizens covered by telemedicine

All functioning community clinics and union health centers have been brought under coverage of Internet connectivity through provision of one laptop and one broadband wireless Internet modem in each. These ICT gadgets are exploring a new horizon of expanding medical consultation by qualified physicians to patients visiting community clinics and union health centers. About 13,000 community clinics are functioning, while writing this report, all over the rural areas of Bangladesh–one for about 6,000 to 10,000 people. There are about 4,500 unions, each having an outpatient health center. In community clinics or most of the union health centers, no qualified doctor is posted. However, there may be occasions when some patients need to consult a qualified medical practitioner. In such cases, a Skype video-conferencing will be setup to hook the community clinic or union health center to a doctor sitting in the nearby upazila hospital to have a direct conversation between the patient and the doctor. The laptop computers in the community clinics and union health centers will be used for multiple purposes, viz. telemedicine, updating community health data, health education to people, training of health staff, monitoring of clinic operation time, email communication, and Internet-browsing. The telemedicine project of MIS-Health received the National ICT4 Development Award in 2011.

Citizens' feedback system: Complaint-suggestion box

A mission of the joint expatriate national independent review team for the second year of HPNSDP 2011-2016 recommended promotion of the SMS-based complaint-suggestion box

run by MIS-DGHS to improve accountability and transparency of public hospitals. In each of about 800 public hospitals/organizations, a display board is mounted, which describes how to send complaints about quality of services or suggestions for service improvement (Figure 17.4). Clients of the hospitals or health organizations make complaints or suggestions to a particular mobile number. A web server located at MIS-DGHS receives the complaints-suggestions. The responsible staff members at MIS-DGHS check the complaints and suggestions instantly on the web portal and then talk to the SMS senders to know more about the message. The staff members then talk to the local authority to solve the problem or work on the suggestions. A real time n analysis of the complaints can be seen in our website www.dghs.gov.bd >> Data >> Complaint & Suggestion Box.

Fingerprint machines in public hospitals for remote central monitoring of staff attendance

Qualified healthcare providers, in general, feel discouraged to work in the remote or rural areas. This is a common problem in any country. In developing countries, absenteeism of the clinical staff from the health stations is another serious problem. To improve office attendance of health staff in Bangladesh, MIS-DGHS installed remote biometric time attendance machines in all upazila and district hospitals and in some tertiary hospitals. These are low-cost fingerprint biometric machines the recorded touch-encounters can be tracked from central office through locally-developed software.

Figure 17.4. A display board mounted on hospital wall. The top section says how to get free medical consultation round-the-clock from a doctor of this hospital by calling a mobile phone number. The bottom section describes how to make complaints or suggestions

During installation, staff members' fingerprints were recorded in the database. Every day, the staff members need to touch the sensor of the machine during their check-in and check-out. The machine itself can keep in memory 30,000 encounters. Connected to a local computer through USB cable, the machine becomes empty of touch-records through transferring the same to the computer when the latter is switched on. At MIS-DGHS, a web-server captures the attendance data whenever the server finds the local computers switched on. Pre-defined web-based reports can be generated on the server-side, which can be accessed through web-browser from anywhere.

mHealth for safe pregnancy and childcare

The MIS-DGHS, in coordination with the Ministry of Health and Family Welfare, is carrying out a partnership program with D.Net to provide an mHealth service called MAMA (Mobile Alliance for Maternal Action). MAMA Bangladesh uses a short code '16227', provides lifesaving information for pregnant women and new mothers, including also advice for their newborn babies and children through SMS and IVRs. This program is supported by USAID, partnered by Smiling Sun Clinic and Save the Children and coordinated by Abt Associates and D.Net.

The MIS-DGHS is also actively working in Gaibandha district of Bangladesh with Johns Hopkins Bloomberg School of Public Health to develop and implement mCare (for pregnancy care) and mTikka (for immunization) solutions to track pregnant mothers and under-five children. In 2011, the mCare project was recognized as one of the top 11 innovations of the world by a global competition operated by mHealth Alliance of the United Nations Foundation.

Bulk SMS

The innovative bulk SMS system of MIS-Health, introduced in 2009, remained an effective solution even as of now to disseminate quick and urgent messages to health staff. The use of bulk SMS was frequent and demand-driven. For bulk SMS system, mobile phone numbers of all health managers and staff members down to the grassroots level were collected and grouped. Customized text messages can be broadcast to one or multiple groups instantly.

Medical and dental admission tests being managed digitally

From 2011, the medical and dental admission tests at the public and private medical and dental colleges of Bangladesh are being conducted digitally. Admission-seekers submit applications by online electronic form. The system then checks and authenticates prerequisite educational qualifications from

databases of secondary and higher secondary school examinations. Students then submit test-fees by mobile phone top up. On successful fee submission, a text alert informs the student for collecting the Admit Card by login to admission website. Students' admission halls and seat plans are also managed digitally. The answer-sheets of examinations use OMR (optical mark reader) technology. After the examination, all the answer-sheets are transported to Dhaka the same day from allover the country. The next day, all answer-sheets are read by OMR machine, and results are prepared with intelligent software to inform the eligible examinees for which institutions they qualified for admission. On the same day or the next day, results are sent to students' mobile phone numbers and also through website.

Digital training facility

The digital training facility, inclusive of an auditorium created by MIS-Health in 2009, was efficiently used over the past years. Its attraction as one of the best meeting and seminar places continues to increase. Equipped with state-of-the-art gadgets, such as digital podium and sound, interactive board, wireless presentation, wi-fi network, video-conferencing, etc., the facility attracts the organizations to hold their workshops, meetings, and symposia. The Management Sciences for Health (MSH) presented two air-conditioners for the MIS auditorium as the number of audience is on the rise, requiring more efficient cooling of the auditorium. The IT Lab of MIS has also been renovated with smart sitting arrangement.

A well-connected health system

The MIS-DGHS was the hero in the entire public sector of Bangladesh that first created the Internet connectivity across all health-points down to the upazila level (~800 places) by April 2009. Now, this network is completed through expansion to all the grassroots-level health facilities (all union health centers and community clinics) and all the community health workers. The union health centers and community clinics have laptop computers and wireless modems. The community health workers have been given android tablets.

Hospital automation

In fiscal 2011-2012, automation of three public hospitals has been started. These include National Institute of Kidney Diseases and Urology (NIKDU), Government Employees' Hospital, and Azimpur Maternity Hospital. Earlier, the Bangladesh Secretariat Clinic was automated. Currently, two more hospitals, viz. National Institute of Traumatology, Orthopedics and Rehabilitation (NITOR) and National Institute of Cardiovascular Diseases (NICVD) have been included. Two more hospitals (DMCH and NINS) will be included.

Human resource for HIS and eHealth

Currently, there are 781 sanctioned posts of statistical staff throughout the country. These staff members are already made skilled through training and engagement in practical work since 2009. These personnel are used as dedicated HIS and eHealth staff. Other staff members are also being trained to

Table 17.1. Distribution of sanctioned posts of HIS and eHealth staff by type of organization and their vacancy situation (2014)

Level of facility	Upazila hospitals and health office	District civil surgeon's office	MIS-DGHS	Divisional health office	Postgraduate teaching institute and hospital	DGHS	Medical college hospital	100- to 300-bed hospitals	TB clinic at Chankhar Pool of Dhaka city	Total
Sanctioned posts (No. and %)	483	120	92	23	18	8	17	19	1	781
	61.8%	15.4%	11.8%	2.9%	2.3%	1.0%	2.2%	2.4%	0.1%	100.0%
Existing staffs (No.)	357	62	40	18	10	6	7	9	1	510
Vacant (No. and %)	126	58	52	5	8	2	10	10	0	271
	26.1%	48.3%	56.5%	21.7%	44.4%	25.0%	58.8%	52.6%	0.0%	34.7%

play their role in real-time data-entry at the source of data. The distribution of 781 statistical staff members by type of organization is shown in Table 17.1. By class category, the distribution of these sanctioned posts is as follows: Class I (122, 15.6%); Class II (16,2%); Class III (633, 81%); and Class IV (10, 1.3%).

The load of work done for HIS and eHealth with this limited number of technical staff is unbearable. It may be imagined that if the number of staff could be increased, the HIS and eHealth functions and outcomes could be raised to a much higher level. The available statistical staff members have graduation and/or higher secondary-level education but not in statistical discipline. To meet the current and future challenges of MIS-DGHS, it is very essential to create adequate number of positions of competent persons in all relevant areas. As an interim measure, MIS-DGHS uses an innovative solution to mobilize skilled human resources through outsourcing, with technical assistance from partners.

Technical partners

In addition to the MOHFW, other technical partners, like A2I Project, World Bank, WHO, UNICEF, DFID, UNFPA, Rockefeller Foundation, JICA, USAID, icddr,b, Measure Evaluation, CIDA, UNESCAP, JPGSPH-BRACU, BRAC, JHU, MSH (SIAP), Save The Children, D.Net, CIRPB, etc. assist MIS-DGHS to make technology-related solutions, training, and capacity-building.

Capacity-building and maintenance support

MIS-DGHS continued capacity-building through training, supply of ICT equipment, computer stationeries, payment of Internet bills, and also repair and maintenance support.

Training, workshops, and seminars

In 2013-2014, several types of training courses, workshops, and seminars of different durations were held both at MIS-DGHS office in Dhaka as well as at local hospitals/health offices. A total of 28,165 officers, and staff members participated in the training courses, workshops, and seminars held under the HPNSDP 2011-2016. In the UNICEF-supported training program, another 813 personnel participated. It may be mentioned here that some participants might have joined in more than one training, workshop, or seminar. Detailed information on training, workshops, and seminars is provided in the annex.

Supply of ICT equipment and computer stationeries

Table 17.2 provides information on different types of hardware procured and distributed in 2011-2012 to 2013-2014.

Table 17.2. Hardware procurement from fiscal 2011-2012 to 2013-14

Hardware	Fiscal 2011-2012	Fiscal 2012-2013	Fiscal 2013-2014	Distribution
Desktop computer	600	4360	-	-
Laptop computer	3465	12471	2000	• FY2011-2012: To community clinics • FY 2012-2013: To union health facilities and to the remaining functional community clinics • FY 2013-14: Procurement in process to go to newly-functional community clinics and other health facilities and organizations • Procurement will be finished in 2014-2015
UPS (offline - 600 VA)	500	4000	6000	• Accompanies one for each desktop computer
Tablet device	3500	8400	10000	• To community healthcare providers (HA, HI, and AHI)
Equipment for tertiary-level hospital automation	NIKDU	NICVD and NITOR	-	• Ongoing, not yet finished (in 2013-2014)
Equipment for telemedicine centers and peripherals	10	10	15	• FY2009-2010: Eight telemedicine centers established in 8 hospitals and 1 coordination center at MIS-DGHS • FY2011-2012: Ten additional telemedicine centers in 10 hospitals • FY2012-2013: Ten additional centers in 10 hospitals • FY2013-2014: Fifteen more centers in 15 hospitals
Equipment for data center	Data center start-up in Dhaka	Disaster recovery service center at Khulna	Up-gradation of existing centers	• FY20112-2012: Data center at MIS-DGHS established • FY 2012-2013: Disaster recovery service (DRS) center in Khulna established • FY 2013-2014: Data center and disaster recovery service center will be upgraded

Repair and maintenance of computers, printers, and other accessories

In fiscal 2013-2014, MIS-DGHS at its headquarter repaired 527 computers, monitors, printers, and UPSs. Table 17.3 summarizes the information.

Medical Biotechnology (MBT)

The activities relating to medical biotechnology are going on according to the plan. A number of training programs and workshops were held in 2013-2014, where a total of 486 participants joined. A summary of the training sessions and workshops is provided in the annex. A draft of the MBT law has been prepared. Equipment have been procured to strengthen medical biotechnology laboratories in 8 medical colleges. MBT books have been provided to a number of medical colleges, postgraduate institutions, and Bangabandhu Sheikh Mujib Medical University. In collaboration with iDeshi Bangladesh–a local science and technology philanthropy, work is ongoing to set up biotechnology research laboratory at the Center for Medical Biotechnology.

Table 17.3. Number of computers, monitors, printers, and UPS repaired in FY 2013-2014 by MIS-DGHS

Type of health organization	Computer	Monitor	Printer	UPS	Total
Directorate General of Health Services	87	18	35	12	152
Postgraduate teaching and/or specialized institutes	23	8	5	2	38
Civil surgeon's offices	45	10	15	5	75
District/general hospitals	22	13	7	4	46
Upazila health complexes/Upazila health offices	130	26	45	15	216
Total	307	75	107	38	527

CHAPTER 18

FINANCING HEALTHCARE

Government fund utilization increased in fiscal 2013-2014

The development budget of MOHFW and its agencies comes from Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016. In fiscal 2013-2014, the total allocation under revised annual development program (RADP) for the Directorate General of Health Services (DGHS) was BDT 1,94,122.00 lakh (Figure 19.1). This allocation was distributed among 17 operational plans of DGHS as per respective work plans.

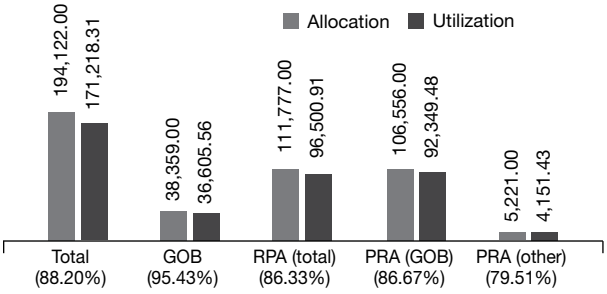


Figure 19.1. Allocation and expenditure (lakh taka) against operational plans of DGHS in fiscal 2013-2014 under HPNSDP (values in parentheses show % of fund utilization against allocation)

Figure 19.1 shows that, as of June 2014, the total expenditure was BDT 171,218.31 lakh, the utilization rate being 88.20%. Of the total RADP allocation, GOB fund was BDT 38,359.00 lakh. The utilization rate of GOB fund was 95.43% (BDT 36,605.56 lakh), and that of RPA fund (RPA-GOB plus RPA-others) was 86.33% (BDT 96,500.91 lakh out of BDT 111,777.00 lakh). The RPA (GOB) fund utilization rate was 86.67% (BDT 92,349.48 lakh, against allocation of BDT 106,556.00 lakh). RPA (other) fund utilization rate was 79.51%. In fiscal 2012-2013, the overall fund utilization rate was 94.3% (GOB: 93.7%; RPA: 93.6%; RPA-GOB: 92.3%; RPA-other: 100%). Thus the overall fund utilization was lower in FY 2013-2014. However, utilization of the GOB fund was higher year (95.43%) than that of FY 2012-2013.

Table 19.1. Allocation, expenditure, and utilization in FY 2013-2014 of HPNSDP 2011-2016 fund against different operational plans of DGHS

Program	Allocation (BDT in lakh)	Expense (BDT in lakh)	Utilization rate
Maternal, neonatal, child and adolescent healthcare (MNCAH)	63,200.00	54,086.20	85.58%
Essential service delivery (ESD)	5,452.00	4,271.84	78.35%
Community-based healthcare (CBH)	6,100.00	5,033.56	82.52%
TB and leprosy control (TLC)	5,716.00	5,129.50	89.74%
National AIDS/STD program (NASP)	3,850.00	3,596.92	93.43%
Communicable disease control (CDC)	11,275.00	11,166.54	99.04%
Non-communicable disease control (NCDC)	9,947.00	6,280.00	63.13%
National eye care (NEC)	335.00	314.40	93.85%
Hospital services management and safe blood transfusion (HSM & SBT)	41,485.00	40,692.76	98.09%
Alternative medical care (AMC)	1,100.00	993.56	90.32%
In-service training (IST)	2,923.00	2,767.84	94.69%
Pre-service education (PSE)	15,334.00	15,128.45	98.66%
Planning, monitoring, and research (PMR)	1,100.00	944.00	85.82%
Health information systems and eHealth (HIS & eH)	9,525.00	5,364.62	56.32%

Table 19.1 continued

Program	Allocation (BDT in lakh)	Expense (BDT in lakh)	Utilization rate
Health education and promotion (HEP)	2,075.00	1,921.78	92.62%
Procurement, logistics and supplies management (PLSM)	8,050.00	7,969.82	99.00%
National nutrition services (NNS)	6,655.00	5,556.52	83.49%
Total	194,122.00	171,218.31	88.20%

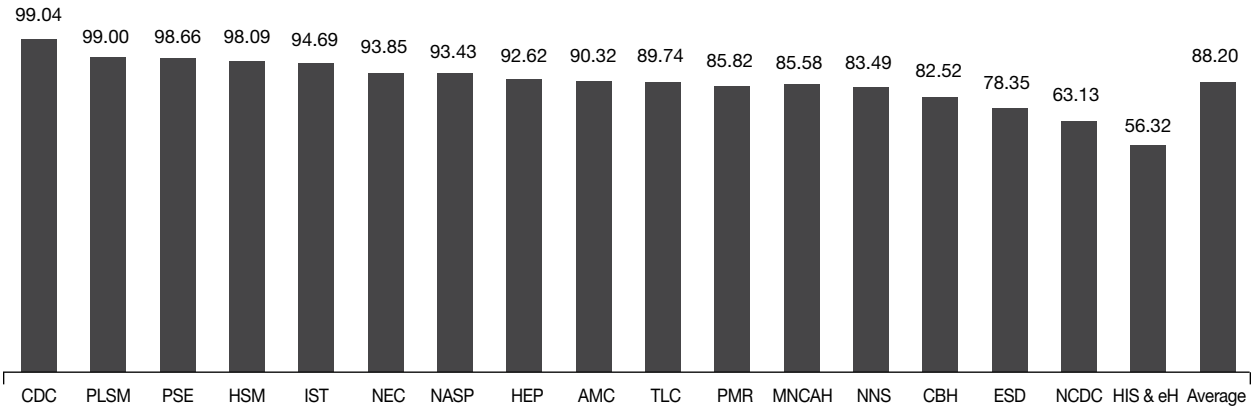


Figure 19.2. Fund utilization rate (%) of the DGHS operational plans in FY 2013-2014

Table 19.1 shows the allocation, expenditure, and utilization in FY 2013-2014 (revised ADP) of HPNSDP 2011-2016 fund against different operational plans of DGHS. Detailed breakdown is shown in the annex.

Figure 19.2 shows the fund utilization rate of different operational plans of DGHS in fiscal 2013-2014 under the HPNSDP 2011-2016.

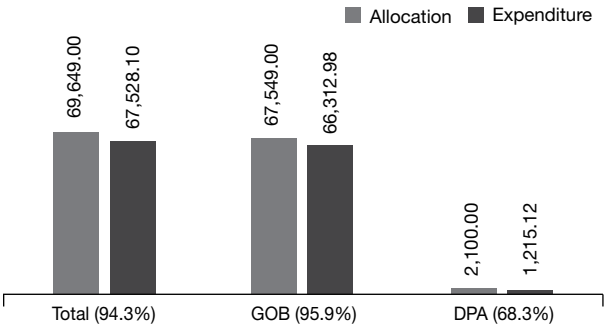


Figure 19.3. Allocation and expenses in lakh taka of 25 investment projects of MOHFW under HPNSDP in fiscal 2013-2014 (values in parentheses show fund utilization rate in %)

Figure 19.3 shows the allocation and expense of 25 investment projects of MOHFW in fiscal 2013-2014 under HPNSDP 2011-2016. Total allocation was BDT 69,649.00 lakh and total expense BDT 67,528.10 lakh. The utilization rate was 96.95%. The GOB allocation was BDT 67,549.00 lakh, and expense was BDT 66,312.98 lakh. The utilization rate was 98.17%. The Direct Project Aid (DPA) allocation was BDT 2,100.00 lakh, and the expense BDT 1,215.12 lakh. The utilization rate was 57.86%.

Table 19.2 shows the allocation, expenditure and utilization in FY 2013-2014 under HPNSDP 2011-2016 for different investment projects of MOHFW. Detailed breakdown is shown in the annex.

Budget of the Ministry of Health and Family Welfare (MOHFW)

Figure 19.4 shows the budget of MOHFW allocated by the Ministry of Finance for fiscal 2013-2014, fiscal 2012-2013 (revised budget), and fiscal 2011-2012 (revised budget). The revised budget is an indication of utilization pattern, which reveals that the MOHFW has utilized

Table 19.2. Allocation, expenditure, and utilization in FY 2013-2014 under HPNSDP 2011-2016 for different investment projects

Investment project	Allocation (BDT in lakh)	Expense (BDT in lakh)	Utilization rate (%)
Establishment of 250-bed National Ophthalmology Inst. and Hospital (1st Phase: 250 beds)	15.00	323.30	69.53
Up-gradation of National Institute of Cancer Research & Hospital from 50 bed to 300 beds	102.00	732.12	45.70
Establishment of National Institute of Laboratory Medicine and Referral Centre	600.00	599.94	99.99
Extension of Dhaka Shisu (Children) Hospital Project	850.00	800.53	94.18
Establishment of Essential Drugs Company Limited, 3rd Plant, Gopalganj	5.00	4.97	99.40
Expansion and Quality Improvement of Nursing Education	1,500.00	1,498.00	99.87
Expansion and Modernization of Dhaka Medical College Hospital	1,259.00	1,259.00	100.00
Establishment of National Institute of ENT (1st Phase)	935.00	850.00	90.91
Revitalization of Community Healthcare Initiatives in Bangladesh	36,620.00	36,356.23	99.28
Conversion of BSMMU to a Center of Excellence Project	6,500.00	6,397.46	98.42
Establishment of Sheikh Fajilatunnesa Mujib Eye Hospital and Training Institute, Gopalganj	3,417.00	3,389.19	99.19
Establishment of National Centre for Cervical and Breast Cancer Screening and Training at BSMMU	400.00	394.66	98.67
Establishment Sheikh Sayera Khatun Medical College and Hospital and Nursing Institute, Gopalganj	900.00	897.31	99.70
Establishment of Shatkhira Medical College & Hospital	1,428.00	1,426.00	99.86
Establishment of Faridpur Medical College & Hospital	4,016.00	4,015.00	99.98
National Institute of Digestive Diseases Research & Hospital	18.00	18.00	100.00
Establishment of Kushtia Medical college	2,150.00	2,150.00	100.00
Establishment of Mother and Child Care Hospital under A K Khan Health Care Center of Excellence	1.00	0.00	0.00
Establishment of Shaheed Sayed Nazrul Islam Medical College, Kishoreganj	5,138.00	4,996.12	97.24
Extension of Shaheed Sheikh Abu Naser Specialized Hospital, Khulna	800.00	796.00	99.50
Establishment of Trauma Centre at Gopalganj	190.00	170.00	89.47
Sustaining Influenza Surveillance Networks and Response to Seasonal and Pandemic Influenza in Bangladesh	0.00	261.10	174.07
Provision for equipment and professional training for Ahsania Mission Cancer Hospital	500.00	0.00	0.00
Extension of National Institute of Orthopedic Hospital and Rehabilitation Center (NITOR)	200.00	193.17	96.59
Establishment of Nursing Institute of Pabna	5.00	0.00	0.00
Total	67,549.00	67,528.10	96.95

increased amount of fund from fiscal 2011-2012 to fiscal 2012-2013. The utilization pattern in fiscal 2013-2014 will be understood after the fiscal year ends.

Distribution of MOHFW budget

Table 19.3 shows the distribution of the MOHFW budget by economic code for fiscal 2013-2014 and 2012-2013.

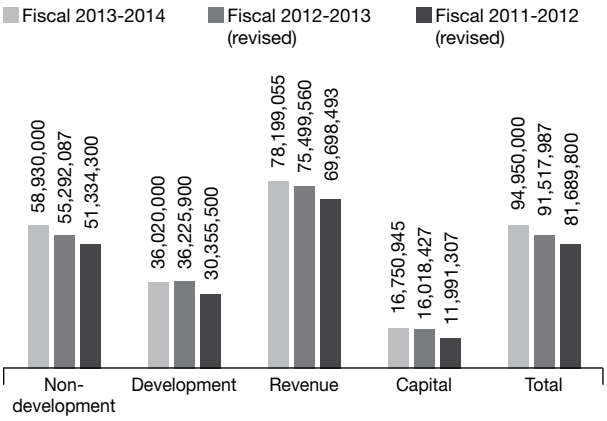


Figure 19.4. MoHFW budget allocated by Ministry of Finance of the Government of Bangladesh (in thousand taka)

Non-development budget

Table 19.4 shows the allocation of non-development budget of fiscal 2013-2014 and 2012-2013 and revised budget of 2013-2014 in different organizations under DGHS.

Bangladesh National Health Accounts (NHA)

The Bangladesh National Health Accounts 1997–2007 was officially published in 2010 by the Health Economics Unit (HEU) of the Ministry of Health and Family Welfare. No updated NHA is available since then. Table 19.5 shows the Total Health Expenditure (THE) and its share by different contributors in Bangladesh (2006-2007).

The excerpts from NHA 1997-2007 was published in detail in Health Bulletin 2012 which is available in our website (www.dghs.gov.bd).

Table 19.3. Distribution of MOHFW budget by economic code for fiscal 2013-2014 and 2012-2013 (Tk in thousand) (Ref: MOF 2013)

Head	Budget 2013-2014	Revised 2012-2013	Budget 2012-2013
Pay of officers (4500)	6,800,984	5,394,794	4,695,178
Pay of establishment (4600)	13,631,162	12,406,586	15,157,448
Allowances (4700)	15,530,570	13,203,772	15,036,637
Supplies and services (4800)	31,578,105	12,149,229	32,691,772
Repairs, maintenance, and rehabilitation (4900)	2,291,132	2,087,775	2,760,090
Grants in aid (5900)	1,975,220	1,898,180	1,842,180
Contributions to international organizations (6100)	9,850	22,385	5,850
Pensions and gratuities (6300)	4,200,000	6,343,500	3,870,000
Block allocations (6600)	1,281,032	78,239	1,744,048
Revenue-general (6700)	901,000	21,915,100	-
Total revenue	**78,199,055**	**75,499,560**	**77,803,203**
Acquisition of assets (6800)	7,450,395	1,478,370	9,134,840
Acquisition/Purchase of land and landed properties (6900)	530,000	-	80,000
Construction and works (7000)	2,607,350	4,257	5,930,057
Advances to government employees (7400)	246,000	225,000	215,000
Development import duty and VAT (7900)	40,500	12,400	387,000
Capital block allocation & misc. capital expense (7980)	5,876,700	14,298,400	-
Total capital	**16,750,945**	**16,018,427**	**15,746,897**
Total revenue + capital	**94,950,000**	**91,517,987**	**93,550,100**

Table 19.4. Allocation of non-development budget of FY 2013-2014 and FY 2012-2013 and revised non-development budget of FY 2012-2013 in different organizations under DGHS (Ref: MOF 2013) (in actual Taka)

Head	2013–2014 Budget	2012–2013 Revised budget	2012–2013 Budget
DGHS	1,655,369,000	1,565,645,000	1,590,298,000
Divisional establishments	74,665,000	69,344,000	72,004,000
Civil surgeon's offices	652,647,000	610,462,000	645,797,000
Upazila health offices	5,959,055,000	5,625,080,000	5,944,599,000
Medical colleges	1,901,101,000	1,702,275,000	1,764,356,000
Paramedical institutes	45,164,000	42,602,000	44,560,000
Medical assistant training schools	116,499,000	109,604,000	116,534,000
TB control and training institutes	40,176,000	37,641,000	38,781,000
Dental colleges	71,881,000	67,440,000	68,446,000
Govt. Tibbia College, Sylhet	8,132,000	7,456,000	7,707,000
Govt. Unani & Ayurvedic Degree College & Hospital	48,615,000	46,632,000	46,058,000
Govt. Homeopathic Degree College & Hospital, Dhaka	48,508,000	43,864,000	44,791,000
Center for medical education	17,548,000	16,733,000	16,749,000
Medical college hospitals	4,157,923,000	4,437,463,000	4,468,607,000
District hospitals	3,935,816,000	4,072,905,000	4,080,293,000
Other district-level hospitals	102,714,000	113,163,000	123,850,000
Upazila health complexes and sub- centers	8,087,857,000	8,179,716,000	8,525,775,000
Dental college hospitals	102,932,000	103,468,000	111,221,000
Specialized hospitals and institutes	2,617,113,000	2,721,310,000	2,819,560,000
Epidemic disease control	30,081,000	28,526,000	30,206,000
TB centers	162,169,000	152,413,000	164,505,000
School health centers	36,051,000	34,190,000	37,199,000
Other facilities	207,640,000	198,216,000	202,573,000

Table 19.5. Total health expenditure (THE) and its share by different contributors in Bangladesh (2006-2007)

Public sector		Household		Private		Insurance		NGO		Development partners		Total THE
Million Taka	% of THE	Million Taka	% of THE	Million Taka	% of THE	Million Taka	% of THE	Million Taka	% of THE	Million Taka	% of THE	Million Taka
41,318	26%	103,459	64%	1,325	1%	314	0%	2,092	1%	12,391	8%	160,899

Table 19.5. shows the final total health expenditure (THE) and its share by different contributors in Bangladesh (2006-2007)

Annex to chapter 4

Summary of private-public partnerships for community clinics

Partner organization	Working area	Key function
PLAN International	5 districts, 6 upazilas, 932 CCs	Capacity-building of Core Groups (CGs) and Community Support Groups (CSGs)
CARE	4 districts, 24 upazilas, 639 CCs	
DASCOH	1 district, 9 upazilas, 225 CCs	
SEED	Randomly-selected area	Operational research on CC performance
PHD	1 district, 7 upazilas, 148 CCs	Capacity-building of Core Groups (CGs) and Community Support Groups (CSGs)
M-CHIP	2 districts, 19 upazilas, 360 CCs	
FANTA 3600	4 districts, 27 upazilas, 602 CCs	Distribution of BCC materials and others
Health network	9 districts, 9 upazilas, 54 CCs	Capacity-building of Core Groups (CGs) and Community Support Groups (CSGs)
VSO	1 district, 8 upazilas, 285 CCs	
Spring	7 districts, 15 upazilas, 432 CCs	Capacity-building of CHCP, HA, FWA, Core Groups (CGs), and Community Support Groups (CSGs) in nutrition

Data on institutional obstetric care according to UN process indicators by division-wise disaggregation (2013)

Head	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	Bangladesh
Visit for ANC service (N)	66878	278669	530874	350144	211445	306997	111463	1856470
Admitted patients (N)	37981	118406	260527	127912	127959	128523	59705	861013
Complications treated (N)	16704	46194	104376	54005	24065	26907	22602	294853
Normal delivery (N)	12697	51831	90095	46624	59836	58103	25230	344416
Forceps/Vacuum/Destructive operation (N)	43	988	1034	381	288	889	1141	4764
Vaginal breech/Face presentation delivery (N)	113	1434	1790	556	344	1254	579	6070
Cesarean section (N)	9393	32048	90158	39865	28571	29119	14969	244123
Total deliveries (N)	22246	86301	183077	87426	89039	89365	41919	599373
Livebirth (N)	21652	85718	180095	86236	88521	88057	40145	590424
Stillbirth (N)	1235	3018	4660	2018	1657	2376	2010	16974
Other surgeries (N)	1934	4194	8571	3097	2398	3653	1682	25529
Referred in (N)	1482	5756	8752	3880	2048	4951	3389	30258
Referred out (N)	2589	5979	12413	4698	4916	8844	3854	43293
Visit for PNC service (N)	18050	103011	221235	100698	95936	102146	57975	699051
Maternal death (N)	124	482	667	239	437	229	478	2656
Neonatal death (N)	897	403	2649	609	682	643	709	6592
Proportion (%) of all births in EmOC facilities	13.03	14.80	18.81	27.16	23.47	27.59	20.63	20.28
Met need (%) for EmOC	65.22	52.81	71.49	111.87	42.29	55.39	74.16	66.51
Cesarean section rate as % of all births	5.50	5.50	9.26	12.39	7.53	8.99	7.37	8.26
Case-fatality rate (CFR) (%)	0.74	1.04	0.64	0.44	1.82	0.85	2.11	0.90

Data on institutional obstetric care according to UN process indicators by type of facility (2012)

UN process indicator	Med. coll. hosp.	District hosp.	Upazila health complex	MCWC	Total in govt. facility		NGO	Private clinic/ hosp.	Other	Total in non-govt. facility		Total
	No.	No.	No.	No.	No.	No.	% of total	No.	No.	No.	% of total	No.
Visit for ANC service	116445	287976	720486	200956	6119	1331982	71.7	216560	307928	524488	28.3	1856470
Admitted patients	135052	193026	258058	35075	3354	624565	72.5	47640	188808	236448	27.5	861013
Complications	53333	79622	72563	5198	455	211171	71.6	12252	71430	83682	28.4	294853
Normal delivery	38711	60154	143346	25280	1973	269464	78.2	27084	47868	74952	21.8	344416
Forceps/Vacuum/ Destructive operation	1809	267	1611	310	0	3997	83.9	401	366	767	16.1	4764
Vaginal breech/Face delivery	1627	1204	1280	362	13	4486	73.9	261	1323	1584	26.1	6070
Cesarean section	46801	35433	24008	5689	87	112018	45.9	14941	117164	132105	54.1	244123
Total deliveries	88948	97058	170245	31641	2073	389965	65.1	42687	166721	209408	34.9	599373
Livebirth	86490	93521	168174	31459	2050	381694	64.6	42233	166497	208730	35.4	590424
Stillbirth	4435	4520	5510	632	72	15169	89.4	605	1200	1805	10.6	16974
Other surgeries	7203	8775	6464	187	23	22652	88.7	459	2418	2877	11.3	25529
Referred in	8716	8796	5201	1104	0	23817	78.7	450	5991	6441	21.3	30258
Referred out	474	7193	28750	1263	229	37909	87.6	1300	4084	5384	12.4	43293
PNC service	49504	133916	258127	51347	2029	494923	70.8	46731	157397	204128	29.2	699051
Maternal death	778	516	904	122	0	2320	87.3	228	108	336	12.7	2656
Neonatal death	4972	385	679	10	2	6048	91.7	318	226	544	8.3	6592

Distribution of cervical and breast cancer screening centers in the country (total 320)

Name of location	No. of centers established between 2005 and 2012*	No. of centers established between 2012 and 2013**
BSMMU and medical college hospitals	15	
District hospitals	57	
MCHTI, MFSTC, mother and child welfare centres	61	50
Upazila health complexes	127	
Union health and family welfare centres	40	
URBAN Primary Health Care Project	20	
Total	**320**	

*Developed by DGHS, DGFP, BSMMU, and UNFPA; **Developed by MOHFW and BSMMU

Number of colposcopy tests done in different colposcopy clinics in 2013

Name of colposcopy clinic	No. of colposcopy done N (%)
Bangabandhu Sheikh Mujib Medical University (BSMMU)	2208 (26.40)
Sylhet MAG Osmani Medical College Hospital (SMAGOMCH)	556 (6.65)
Rajshahi Medical College Hospital (RMCH)	687 (8.20)
Chittagong Medical College Hospital (CMCH)	578 (6.90)
Dhaka Medical College Hospital (DMCH)	655 (7.85)

Table continued

Name of colposcopy clinic	No. of colposcopy done N (%)
Khulna Medical College Hospital (KMCH)	612 (7.30)
Mymensingh Medical College Hospital (MMCH)	352 (4.20)
Shaheed Suhwardy Medical College Hospital (SSMCH)	128 (1.54)
Sir Salimullah Medical College & Mitford Hospital	45 (0.54)
Faridpur Medical College Hospital (FMCH)	382 (4.56)
Barisal Sher-e-Bangla Medical College Hospital (SBMCH)	205 (2.45)
Comilla Medical College Hospital (CoMCH)	246 (2.95)
Rangpur Medical College Hospital (RpMCH)	229 (2.75)
Dinajpur Medical College Hospital (DinajMCH)	195 (2.35)
Shaheed Ziaur Rahman Medical College Hospital (SZMCH)	57 (0.70)
Failure to attend	1226 (14.65)
Total	**7135 (85.35)**

Distribution of children aged 0 day to 5 years by division in each category of IMCI diseases who received treatment from the IMCI facilities (2013)

Disease/health problem	Unit	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	Total
Very severe disease	No.	5743	22939	44833	33672	21803	8509	15297	152796
	%	3.8	15.0	29.3	22.0	14.3	5.6	10.0	100.0
Pneumonia	No.	16702	73806	131196	48238	74606	31239	35834	411621
	%	4.1	17.9	31.9	11.7	18.1	7.6	8.7	100.0
No-pneumonia (cough and cold)	No..	79102	302642	534295	234995	347867	142856	134935	1776692
	%	4.5	17.0	30.1	13.2	19.6	8.0	7.6	100.0
Diarrhea	No..	34859	135023	185360	83734	97489	58390	70452	665307
	%	5.2	20.3	27.9	12.6	14.7	8.8	10.6	100.0
Fever-malaria	No.	292	4478	2245	1577	565	603	147	9907
	%	2.9	45.2	22.7	15.9	5.7	6.1	1.5	100.0
Fever-no malaria	No..	59522	173353	363421	126794	176507.4	92511	76350	1068458
	%	5.6	16.2	34.0	11.9	16.5	8.7	7.1	100.0
Fever-malaria unlikely	No.	7	152	144	26	21	7	0	357
	%	2.0	42.6	40.3	7.3	5.9	2.0	0.0	100.0
Measles	No.	1284	2577	2987	799	1414	370	560	9991
	%	2.0	42.6	40.3	7.3	5.9	2.0	0.0	100.0
Ear problem	No.	10736	27211	61186	19777	41672	17992	21231	199805
	%	12.9	25.8	29.9	8.0	14.2	3.7	5.6	100.0
Drowning	No.	27	152	121	93	309	41	84	827
	%	5.4	13.6	30.6	9.9	20.9	9.0	10.6	100.0
Child injury	No.	47	73	233	210	76	100	104	843
	%	3.3	18.4	14.6	11.2	37.4	5.0	10.2	100.0
Pus draining from umbilicus	No.	0	63	398	4	58	11	1	535
	%	5.6	8.7	27.6	24.9	9.0	11.9	12.3	100.0
Others	No.	61337	159312	320693	134474	164968	67087	90773	998644
	%	0.0	11.8	74.4	0.7	10.8	2.1	0.2	100.0
Total	No.	269658	901781	1647112	684393	927355	419716	445768	5295783
	%	5.1	17.0	31.1	12.9	17.5	7.9	8.4	100.0

Distribution of children (%) aged 1-5 year(s) in each IMCI disease category by division (2012)

Disease/health problem	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	Total
Cases	269658	901781	1647112	684393	927355	419716	445768	5295783
Very severe disease	2.1	2.5	2.7	4.9	2.4	2.0	3.4	2.9
Pneumonia	6.2	8.2	8.0	7.0	8.0	7.4	8.0	7.8
No-pneumonia (cough and cold)	29.3	33.6	32.4	34.3	37.5	34.0	30.3	33.5
Diarrhea	12.9	15.0	11.3	12.2	10.5	13.9	15.8	12.6
Fever-malaria	0.1	0.5	0.1	0.2	0.1	0.1	0.0	0.2
Fever-no malaria	22.1	19.2	22.1	18.5	19.0	22.0	17.1	20.2
Fever-malaria unlikely	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Measles	0.5	0.3	0.2	0.1	0.2	0.1	0.1	0.2
Ear problem	4.0	3.0	3.7	2.9	4.5	4.3	4.8	3.8
Drowning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Child injury	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pus draining from umbilicus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	22.7	17.7	19.5	19.6	17.8	16.0	20.4	18.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Distribution of IMCI diseases (%) within each age-group of children of both sexes, who received treatment from the IMCI fcilities (2013)

Disease/health problem	0-28 day(s)	29-59 days	2-12 months	1-5 year(s)	Total
Total cases (N)	114908	179398	1793938.4	3184595	5295783.4
		Percentage			
Very severe disease	27.8	23.3	2.1	1.3	2.9
Pneumonia			9.8	7.4	7.8
No-pneumonia (cough and cold)			36.5	35.2	33.5
Diarrhea	13.0	22.2	12.7	12.0	12.6
Fever-malaria			0.2	0.2	0.2
Fever-no malaria			20.8	21.8	20.2
Fever-malaria unlikely			0.0	0.0	0.0
Measles	1.2	1.1	0.1	0.1	0.2
Ear problem			3.4	3.6	3.8
Drowning	0.1	0.0	0.0	0.0	0.0
Child injury	0.0	0.0	0.0	0.0	0.0
Pus draining from umbilicus	0.0				0.0
Others	57.9	53.4	14.3	18.2	18.9
Total	100.0	100.0	100.0	100.0	100.0

Distribution of IMCI diseases by age-group (summary of data received from IMCI facilities in 64 districts for 2012)

Disease/health problem	Unit	0-28 day(s)	29-59 days	2-12 months	1- 5 year(s)	Total
Very severe disease	No.	31972	41722	37288	41814	152796
	%	20.9	27.3	24.4	27.4	100.0
Pneumonia	No.			176259	235362	411621
	%			42.8	57.2	100.0
No-pneumonia (cough and cold)	No.			654689	1122003	1776692
	%			36.8	63.2	100.0
Diarrhea	No.	14885	39770	228468	382184	665307
	%	2.2	6.0	34.3	57.4	100.0
Fever-malaria	No.			3531	6376	9907
	%			35.6	64.4	100.0
Fever-no malaria	No.			373009	695449	1068458
	%			34.9	65.1	100.0
Fever-malaria unlikely	No.			115	242	357
	%			32.2	67.8	100.0
Measles	No.	1421	2017	2643	3910	9991
	%	14.2	20.2	26.5	39.1	100.0
Ear problem	No.			61517	115825	199805
	%			30.8	58.0	100.0
Drowning	No.	59	64	214	490	827
	%	7.1	7.7	25.9	59.3	100.0
Child injury	No.	19	76	239	509	843
	%	2.3	9.0	28.4	60.4	100.0
Pus draining from umbilicus	No.	54				535
	%	10.1	0.0	0.0	0.0	100.0
Others	No.	66498	95749	255966	580431	998644
	%	6.7	9.6	25.6	58.1	100.0
Total	No.	114908	179398	1793938.4	3184595	5295783.4
	%	2.2	3.4	33.9	60.1	100.0

Annex to chapter 5

Number of sanctioned beds, free beds, departments, wards, cabins, and operation theaters in some private hospitals (arranged by bed-capacity) (2013)

Name and location of private health facility	Number					
	Sanctioned bed	Free bed	Department	Ward	Cabin	Operation theater
Jalalabad Ragib-Rabeya Hospital, Sylhet	890	9	14	18	120	10
BIRDEM Hospital, Dhaka	596	118	0	27	117	11
Ad-din Medical College Hospital, Dhaka	500	290	23	15	98	7
Shahid Mansur Ali Medical College Hospital, Uttara, Dhaka	500	200	19	13	20	6
Uttara Adhunik Medical College Hospital, Uttara, Dhaka	500	0	12	12	0	11
East West Medical College Hospital, Uttara, Dhaka	400	80	14	14	29	6
Khawja Yunus Ali Medical College and Hospital, Chowhali, Sirajganj	400	40	67	19	72	9
North Bengal M. C & Hospital, Sirajganj Sadar	400	120	12	10	30	6
Medical College for Women and Hospital, Uttara, Dhaka	350	50	11	7	23	4
Apollo Hospitals, Dhaka	304	0	31	15	49	8
Dhaka Hospital, icddr,b	300	300	2	15	29	13
Dhaka Community Hospital, Dhaka	250	75	14	3	20	2
Islami Bank Hospital, Dhaka	160	0	9	8	76	5
Christian Hospital, Chondroghona, Chittagong	125	0	10	10	10	3
BNSB Eye Hospital, Sirajganj Sadar	100	20	4	9	11	2
Z.H. Sikder Women's Medical College Hospital, Dhaka	100	0	0	2	17	2
Lion Eye Institute & Hospital, Dhaka	84	10	6	6	10	4
Monowara Hospital, Hatkhola Road, Dhaka	74	4	6	26	48	3
Islami Bank Hospital, Laxmipur, Rajshahi	63	0	8	6	30	2
Prime Hospital Ltd., Hospital Road, Maijdee, Noakhali	60	2	3	4	34	2
Damien Foundation, Netrakona TB & Leprosy Hospital, Anantapur, Netrokona	52	52	1	10	0	0
Ambia Hospital, Bogra Road, Barisal	50	0	4	6	15	2
Islami Bank Hospital, Chandmary, Barisal	50	0	16	4	20	2
City Hospital Private, Maijdee, Noakhali	40	2	5	2	27	2
Dr. Moklessur Clinic, Sadar Road, Barisal	40	0	4	3	12	2
Fair Health Clinic, Barisal	40	0	3	2	18	2
Good Heal Hospital, Maijdee, Noakhali	40	5	3	4	22	2
Janani General Hospital, Noakhali Sadar	40	0	0	2	23	1
Luthern Health Care of Bangladesh, Dumki, Patuakhali	40	0	3	2	8	2
Modern Hospital Private, Maijdee, Noakhali	40	0	5	8	32	2
Surgecare Clinic, Pirojpur Sadar	40	0	0	3	14	2
Amina Hospital, Bonpara, Natore	30	2	4	4	5	1
Avicena Hospital Ltd., Sirajganj Sadar	30	0	4	10	20	4
Dolphin Clinic, Bornalimur, Rajshahi	30	2	6	2	15	2
Dream Hospital, Begumganj, Noakhali	30	0	5	15	15	1

Table continued

Name and location of private health facility	Number					
	Sanctioned bed	Free bed	Department	Ward	Cabin	Operation theater
Medinova Hospital, Sirajganj Sadar	30	2	5	16	14	2
Mukti Clinic, Laxmipur, Rajshahi	30	0	4	3	15	2
Safeway (Pvt) Hospital, Mymensingh Sadar	28	0	0	2	6	2
Hathazari Adhunic Hospital, Chittagong	25	2	4	4	5	1
Apollo Hospital & Diagnostic Complex, Maijdee Bazar, Noakhali	20	0	3	12	8	2
Bengal Community, Ullapara, Sirajganj	20	0	3	2	4	1
Eden Nursing Home, Alekanda, Barisal	20	2	3	3	8	1
Health Care Clinic, Parara Road, Barisal	20	0	4	4	8	1
Mamota Clinic, Kali Bari Road, Barisal	20	0	4	2	18	2
Modern Clinic, Munshiganj	20	0	3	3	3	1
Muslim Aid Community Hospital, Pirojpur Sadar	20	0	3	3	5	1
Nalta Hospital, Kaliganj, Satkhira	20	0	6	2	3	2
Padma Clinic, Kazihata, Rajshahi	20	1	2	2	10	1
Saiam (Pvt) Hospital, Mymensingh Sadar	20	0	0	2	9	2
Santi Private Hospital, Magura	20	0	2	14	6	1
Woodland Hospital & Diagnostic Complex, Maijdee, Noakhali	20	0	3	8	12	1
Central Hospital, Sirajganj Sadar	15	3	5	12	10	2
A K Eye Hospital, Magura	10	0	1	6	4	1
Ahamedia General Hospital, Mymensingh	10	0	0	2	2	1
Ahsania Clinic, Debhata, Satkhira	10	0	2	2	2	1
Akota Clinic & Diagnostic Center, Rajshahi	10	1	3	3	6	1
Akota Clinic, Satkhira Sadar	10	0	2	2	2	1
Al Hera Private Hospital, Magura	10	0	0	3	4	1
Al-Modina Clinic, Magura	10	0	0	6	4	1
Al Modina Genaral Hospital, Kishoreganj	10	0	2	2	3	1
Al Safa (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	4	1
Al Zannat (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	4	1
Al-Amin Nursing Home, Mymensingh Sadar	10	0	0	2	8	1
Albaraka Clinic, Laxmipur, Rajshahi	10	0	4	2	2	1
Al-Baraka Clinic, Magura	10	0	0	7	3	1
Al-Shefa Clinic, Joypurhat	10	0	2	2	4	1
Ambia Hospital, Pirojpur, Barisal	10	0	2	2	3	1
Amena Clinic, Talaimari, Rajshahi	10	0	2	4	4	1
Anowara Clinic, Satkhira Sadar	10	1	3	2	1	1
Anwara Private Hospital, Jhenaidah	10	0	2	2	3	1
Apollo Nursing Home, Sipaipara, Rajshahi	10	0	3	3	3	1
Arafat Clinic & Diagnostic, Munshiganj	10	0	2	2	3	1
Aroggo Clinic, Magura	10	0	4	6	4	1
Asha (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	1	1
Bangladesh Clinic, Upashohor, Rajshahi	10	1	4	4	1	1
Baral Clinic LTD. Pabna	10	0	1	2	3	1

Table continued

Name and location of private health facility	Number					
	Sanctioned bed	Free bed	Department	Ward	Cabin	Operation theater
Barisal Poly Clinic, Bangla Bazar, Barisal	10	0	3	2	6	1
Bashundhara (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	8	1
Bhai Bhai Private Hospital, Jhenaidah	10	0	2	2	3	1
Bonshepur Nursing Home, Shyamnagar, Satkhira	10	0	2	2	2	1
Brizee Hospital, Laxmipur, Rajshahi	10	2	3	2	2	1
Care Nursing Home, Laxmipur, Rajshahi	10	0	4	2	3	1
Chowmohani General Hospital, Begumganj, Noakhali	10	0	1	0	10	1
City Clinic, Satkhira Sadar	10	0	3	2	2	1
Cure Nursing Home, Laxmipur, Rajshahi	10	0	4	2	5	1
Dastagir Private Hospital, Narsingdi	10	0	1	2	3	1
Desh Eye Hospital, Gazipur Sadar	10	0	2	2	3	1
Dobir Uddin Hospital, Kasiadanga, Rajshahi	10	1	5	4	2	1
Doctors Care Clinic and Hospital, Barguna, Barisal	10	0	2	2	3	1
Dr. Khadem Hossain Clinic, Bangla Bazar, Barisal	10	0	3	3	2	2
Ibne Hashman (Pvt.) Hospital, Feni, Chittagong	10	0	2	2	3	1
Ehsan Genaral Hospital, Magura	10	0	0	5	5	1
EM Center, Mohishbathan, Rajshahi	10	0	5	3	5	1
Ekushey Hospital (Pvt), Mymensingh Sadar	10	0	0	2	2	1
Faruk Al-Nasir Hospital, Kazipur, Sirajganj	10	0	-	-	-	0
Farzina Clinic, Kazipur, Sirajganj	10	0	3	2	4	1
Fatema Nursing Home, Mymensingh Sadar	10	0	0	2	7	2
Fatima Nursing Home, Laxmipur, Rajshahi	10	0	5	5	3	1
Gorib Shah Clinic, Magura	10	0	1	3	4	1
Gorib-E-Nawaz Clinic, Talaimari, Rajshahi	10	1	3	3	3	1
Hasina Clinic & Nursing Home, Magura	10	0	0	7	3	1
Impact MasudulHaque Community Health Centre, Chuadanga	10	0	2	2	1	2
Islami General Hospital, Keshorhat,Rajshahi	10	0	2	3	1	1
Islami General Hospital, Nowhata, Rajshahi	10	0	5	2	2	1
Islamia Poly Clinic, Bangla Bazar, Barisal	10	0	2	2	2	1
Jahangir Health Complex, Mymensingh Sadar	10	0	0	2	6	1
Jam-jam Islami Clinic, Laxmipur, Rajshahi	10	2	3	3	3	1
Jamuna (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	4	1
Jamuna Clinic, Kaliganj, Satkhira	10	0	2	2	2	1
Jamuna Clinic, Laxmipur, Rajshahi	10	0	3	2	4	1
Janani Clinic, Jiban Nagar, Chuadanga, Khulna	10	0	2	2	3	1
Janaseba Clinic & Nursing Home, Magura	10	2	3	3	2	1
Janaseba Clinic, Assasuni, Satkhira	10	0	3	2	2	1
Janata Clinic & Nursing Home, Magura	10	0	0	1	3	1
Janata Clinic, Shipaipara, Rajshahi	10	1	2	2	5	1
Jayeda Hospital, Bonpara, Natore	10	0	2	2	2	1
Khadiza Clinic, Kalia, Narail	10	0	2	2	3	1

Table continued

Name and location of private health facility	Number					
	Sanctioned bed	Free bed	Department	Ward	Cabin	Operation theater
Labib (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	8	1
Life Care Hospital, Mymensingh Sadar	10	0	0	3	4	1
Maya Clinic, Mymensingh Sadar	10	0	0	2	1	1
Mediplus Hospital & Diagnostic Center, Mymensingh Sadar	10	0	0	2	6	1
Micropath Diagnostic and Clinic, Laxmipur, Rajshahi	10	1	5	3	5	1
Mita Private Hospital, Narsingdi	10	0	2	2	4	1
Modern Central Hospital, Barguna, Barisal	10	0	1	3	4	1
Mohanagar Clinic, Kazihata, Rajshahi	10	1	3	3	5	1
Moin Uddin Hospital, Sirajganj Sadar	10	0	1	2	8	2
Mother Clinic, Bhurungamari, Kurigram	10	0	2	2	2	1
Motherland Clinic, Laxmipur, Rajshahi	10	2	3	2	6	1
Mother's Clinic, Uposhohor, Rajshahi	10	0	2	3	2	1
Mukta Clinic, Shibchar, Madaripur	10	0	1	2	3	1
Muktar General Hospital, Gopalpur, Lalpur, Natore	10	0	2	2	3	1
Mukti Clinic, Magura	10	0	2	2	2	1
Nabila General Hospital, Begumganj, Noakhali	10	0	4	1	7	1
Nagorick (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	5	1
Nasima Nursing Home, Mymensingh Sadar	10	0	0	2	6	3
Nazma Nursing Home, Mymensingh Sadar	10	0	0	2	5	1
New Arafat Clinic, Magura	10	0	0	4	2	1
New Surgical Clinic, Magura	10	0	0	7	3	1
Nibedita Nursing Home, Assasuni, Satkhira	10	0	2	4	1	1
Niramoya Clinic, Mymensingh Sadar	10	0	0	2	4	2
Padma Clinic, Magura	10	0	1	2	3	1
Paricharja (Pvt.) Hospital,Mymensingh Sadar	10	0	0	2	5	1
Paromita Eye Hospital, Mymensingh Sadar	10	0	0	2	4	2
PKS Clinic, Satkhira Sadar	10	0	1	1	5	1
Poly Clinic, Magura	10	0	2	6	4	1
Rafia Clinic, Ati Bazar, Keranjganj, Dhaka	10	0	1	2	3	1
Raihana Clinic, Puthia, Rajshahi	10	0	2	4	2	1
Rajdhani (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	3	1
Razzak Memorial Clinic, Alekanda, Barisal	10	0	2	2	3	1
Rokeya (Pvt) Hospital, Mymensingh Sadar	10	0	0	2	6	1
Saleha Clinic, Magura	10	0	0	2	4	1
Salma Clinic, Mymensingh Sadar	10	0	0	2	1	1
Samata Nursing Home, Laxmipur, Rajshahi	10	2	2	4	0	1
Sarmin Private Clinic & Nursing Home, Magura	10	0	2	2	4	1
Satata Clinic, Satkhira Sadar	10	1	3	2	2	1
Satata Private Hospital, Sreepur, Magura	10	0	0	8	2	1
Seba Hospital, Raipur, Laxmipur	10	0	2	2	4	1
Seba Clinic, Magura	10	0	0	2	2	1

Table continued

Name and location of private health facility	Number					
	Sanctioned bed	Free bed	Department	Ward	Cabin	Operation theater
Seba General Hospital, Ullapara, Sirajganj	10	0	2	2	1	1
Sea Side Hospital, Cox's Bazar	10	0	2	2	3	1
Shagata Clinic, Tala, Satkhira	10	0	2	2	2	1
Shahin Clinic (PVT.) Hospital, Feni, Chittagong	10	0	2	2	3	1
Shapla Nursing Home, Mymensingh Sadar	10	0	0	2	9	1
Sharmin Nursing Home, Rajshahi	10	1	2	2	7	1
Sheba Clinic, Jiban Nagar, Chuadanga, Khulna	10	0	2	2	4	1
Sheba Clinic, Kalaroa, Satkhira	10	0	2	2	2	1
Shemul Clinic, Satkhira Sadar	10	0	2	2	2	1
Shurakkha Nursing Home, Mymensingh Sadar	10	0	0	2	10	1
Soudia Hospital, Rajpara, Rajshahi	10	0	4	2	2	1
Sreepur Clinic, Sreepur, Magura	10	0	2	2	2	1
Sunmoon Clinic, Magura	10	0	3	3	4	1
Sunrise Clinic, Magura	10	0	2	2	2	1
The Akota Clinic, Ghose Para, Rajshahi	10	0	6	2	2	1
The Ibn-sina Clinic, Magura	10	0	2	2	2	1
Trauma Center and General Hospital, Mymensingh Sadar	10	0	0	2	5	1
Ullapara Hospital, Ullapara, Sirajganj	10	3	2	3	2	2
Upasam (Pvt.) Hospital, Mymensingh Sadar	10	0	0	2	3	1
Uttaran Nursing Home, Mymensingh Sadar	10	0	0	2	8	1
Uttarbanga Islami Hospital, Laxmipur, Rajshahi	10	0	3	4	4	1
Kaisar Memorial Hospital, Upashahor, Chittagong	9	0	3	2	2	1
Rabeya Banu General Hospital, Biswanath, Sylhet	6	1	11	2	0	1
Total	**8401**	**1415**	**610**	**737**	**1683**	**305**

Annex to Chapter 6

Number of beds, admissions, hospital deaths, outdoor visits, bed occupancy rates, average length of stay, and hospital death rates in medical college hospitals, postgraduate teaching hospitals (2013)

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Bed-occupancy rate (%)	Average length of stay (d)	Average daily number		Hospital death rate (%)
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total			Admission	Outdoor visit	
Medical college hospitals																		
Sher-e-Bangla Medical College Hospital	500	34294	34224	13864	82382	1147	1075	1048	3270	219282	138405	96385	454072	238.3	5.3	226	1244	4.0
Chittagong Medical College Hospital	1313	62173	42550	24508	129231	2715	2340	2453	7508	421431	317191	90965	829587	135.9	5.0	354	2273	5.8
Comilla Medical College Hospital	500	16824	17593	14360	48777	598	443	637	1678	87189	107950	56662	251801	134.4	5.0	134	690	3.4
Dhaka Medical College Hospital	2400	49946	26296	19077	95319	5618	2790	458	8866	607562	432308	184014	1223884	95.9	8.8	261	3353	9.3
Shaheed Suhrawardy Medical College Hospital	720	16302	17409	10093	43804	312	236	142	690	203559	217347	43670	464576	100.0	6.0	120	1273	1.6
Sir Salimullah Medical College Mitford Hospital	600	20149	30280	7803	58232	929	691	335	1955	190013	261247	162562	613822	126.6	4.8	160	1682	3.4
Faridpur Medical College Hospital	500	13853	18077	3983	35913	690	671	422	1783	47294	52099	16290	115683	86.6	4.4	98	317	5.0
Mymensingh Medical College Hospital	1000	0	0	0	0	0	0	0	0	111940	126250	108465	346655	0.0	4.6	0	950	4.9
Shahid Ziaur Rahman Medical College Hospital	500	23315	21008	7115	51438	1187	977	717	2881	163736	162479	24547	350762	152.2	5.4	141	961	5.6
Rajshahi Medical College Hospital	530	48356	49871	17559	115786	2413	1547	1225	5185	212298	321265	66698	600261	226.2	3.8	317	1645	4.5
Dinajpur Medical College Hospital	500	13468	12329	6739	32536	644	607	197	1448	47220	53717	22142	123079	105.4	5.9	89	337	4.5
Rangpur Medical College Hospital	1000	49597	41225	1924	92746	1850	1442	1024	4316	124004	105577	10425	240006	134.7	5.3	254	658	4.7
Sylhet MAG Osmani Medical College Hospital	900	52148	49892	13100	115140	1942	1537	839	4318	325911	444852	106048	876811	151.8	4.3	315	2402	3.8
Khulna Medical college Hospital	500	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0.0
Postgraduate teaching institute hospitals																		
Bangladesh Institute of Tropical and Infectious Disease, Chittagong	0	0	0	0	0	0	0	0	0	1015	8040	25	9080	0.0	0.0	0.0	24.9	0.0
Chittagong Infectious Disease Hospital, Chittagong	20	0	0	0	0	0	0	0	0	0	0	0	0	0.0	1.5	0.0	0.0	0.2
Mugda 500 Bed Hospital, Dhaka	500	0	0	0	0	0	0	0	0	13113	20495	18091	51699	0.0	0.0	0.0	141.6	0.0
National Institute of Cancer Research and Hospital (NICR&H)-Mohakhali, Dhaka	150	1820	1225	577	3622	67	48	3	118	83973	82776	2532	169281	87.9	13.3	9.9	463.8	3.3
National Institute of Cardiovascular Disease (NICVD), Dhaka	414	30425	12916	0	43341	2191	926	0	3117	113901	50605	7763	172269	149.4	5.2	118.7	472.0	7.2

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Bed-occupancy rate (%)	Average length of stay (d)	Average daily number		Hospital death rate (%)
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total			Admission	Outdoor visit	
National Institute of Chest Disease and Hospital (NIDCH), Dhaka	670	8550	2506	132	11188	745	193	0	938	32098	16893	6383	55374	105.2	23.0	30.7	151.7	8.4
National Institute of Kidney Disease and Urology (NIKD&U), Dhaka	150	2742	1608	391	4741	99	72	5	176	39060	19261	3461	61782	77.9	9.0	13.0	169.3	3.7
National Institute of Mental Health & Research (NIMH&R), Dhaka	200	1320	744	76	2140	0	0	0	0	14684	9545	2850	27079	64.5	22.0	5.9	74.2	0.0
National Institute of Ophthalmology (NIO), Dhaka	250	5258	5042	500	10800	0	0	0	0	72462	52915	4762	130139	64.1	5.4	29.6	356.5	0.0
National Institute of Traumatology and Rehabilitation (NITOR), Dhaka	500	15713	3823	411	19947	146	27	1	174	83128	44311	8098	135537	76.5	7.0	54.6	371.3	0.9
Rheumatic Fever Center, Dhaka	0	0	0	0	0	0	0	0	0	10906	17474	709	29089	0.0	0.0	0.0	79.7	0.0

Number of beds, admissions, hospital deaths, outdoor visits, bed occupancy rates, average length of stay, and hospital death rates in district hospitals (2013)

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Total patient days	Average length of stay (d)	Bed-occupancy rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Barisal division																		
Barguna District Hospital	100	4210	6104	1720	12034	50	44	61	155	34833	47646	19551	102030	38384	3.3	105.1	33	280
Barisal General Hospital	100	2459	2847	156	5462	7	7	0	14	27691	33180	14105	74976	5462	6	88	15	205
Bhola District Hospital	100	8746	8357	7693	24796	164	135	245	544	36640	54868	21743	113251	54300	2.27	153	68	310
Jholakathi District Hospital	100	4308	6263	1001	11572	26	15	2	43	49181	55106	45753	150040	37830	3.26	102.39	32	411
Patuakhali 250-bed Sadar Hospital	250	8483	13303	5117	26903	146	129	160	435	44708	54288	45296	144292	106611	4.47	116.83	74	395
Pirojpur District Hospital	100	6665	5507	2678	14850	112		39	151	40332	41982	14956	97270	36015	3.1	98.3	41	266
Chittagong division																		
Bandarban District Hospital	100	2663	2755	1836	7254	23	19	34	76	16160	18895	18860	53915	22632	3.28	62	20	148
Brahmanbaria 250-bed District Sadar Hospital	250	12580	10140	5621	28341	139	127	125	391	157725	128486	66138	352349	291472	13.92	319.42	78	965
Chandpur 250-bed General Hospital	200	7929	9105	8526	25560	104	91	109	304	71345	72375	68163	211883	81142	3.56	100	70	581
Chittagong General Hospital	250	3465	4635	1229	9329	27	22	3	52	72651	63105	37776	173532	65331	6.7	71.2	26	475
Comilla General Hospital	100	11773	14468	4931	31172	12	2	8	22	33244	38498	25326	97068	31172	3.87	85.4	85	266
Cox\'s Bazar 250-bed District Sadar Hospital	250	7564	12104	18156	37824	231	225	129	585	44344	70948	96088	211380	115569	3.08	126.17	104	579
Feni 250-bed District Sadar Hospital	250	7480	10660	6427	24567	173	119	56	348	88375	92686	70040	251101	84390	3	93	67	688
Khagrachari District Hospital	100	3375	5332	1691	10398	80	58	103	241	24235	30569	10953	65757	32048	3.8	87.8	28	180

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Total patient days	Average length of stay (d)	Bed-occupancy rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Lakshmipur District Hospital	100	7960	7953	5926	21839	79	46	24	149	55634	102284	42876	200794	49888	3.2	136.7	60	550
Noakhali 250-bed General Hospital	250	12993	11414	8203	32610	358	309	161	828	65527	77026	51525	194078	144136	4.42	155	89	532
Rangamati General Hospital	100	3374	4230	2020	9624	65	32	44	141	18355	21167	18148	57670	24967	2.62	68.4	26	158
Dhaka division																		
Faridpur General Hospital	100	6099	6366	5025	17490	76	46	39	161	46570	49695	32988	129253	57113	3.42	156.42	48	354
Gazipur District Hospital	100	5730	7919	3161	16810	35	35	30	100	63251	70516	54840	188607	28926	1.84	79.25	46	517
Gopalganj 250-bed District Sadar Hospital	250	9896	12854	5756	28506	227	202	100	529	43996	54583	41003	139582	69163	3.11	75.8	78	382
Jamalpur 250-bed General Hospital	250	12250	17850	9211	39311	154	126	342	622	104755	123426	50711	278892	113868	3	125	108	764
Kishoreganj 250-bed District Sadar Hospital	250	15391	21690	7751	44832	242	168	187	597	100703	113093	89601	303397	116839	2.6	128.04	123	831
Madaripur District Hospital	100	5493	8515	5036	19044	56	40	38	134	32518	33413	26495	92426	41012	2.19	112.4	52	253
Manikganj District Hospital	100	7312	8418	2785	18515	154	93	150	397	76478	103057	76441	255976	52268	3	143	51	701
Munshiganj District Hospital	100	4350	4959	3988	13297	34	33	13	80	49523	70275	29569	149367	34641	2.84	95.08	36	409
Narayanganj 300-bed Hospital	300	2144	3340	1266	6750	83	90	9	182	95792	138763	58523	293078	56456	8.3	76	18	803
Narayanganj General Hospital	100	6173	6211	3331	15715	47	22	8	77	75632	135756	79652	291040	38814	3.16	106.34	43	797
Narsingdi District Hospital	100	2996	2870	2480	8346	41	29	94	164	69349	73275	50068	192692	25279	4	70	23	528
Narsingdi District Hospital (Development)	100	3250	3751	2010	9011	83	57	47	187	64506	73792	50940	189238	46237	5	127	25	518
Netrokona District Hospital	100	8090	12909	3033	24032	87	53	63	203	47243	44494	19375	111112	60328	2.54	165.28	66	304
Rajbari District Hospital	100	7623	9186	2391	19200	128	77	51	256	41888	55883	14473	112244	41275	2.5	113.08	53	308
Shariatpur District Hospital	100	4757	8164	300	13221	75	65	55	195	27902	44405	29761	102068	31530	2.72	86.38	36	280
Sherpur 100-bed District Sadar Hospital	100	8441	8816	4650	21907	121	83	34	238	48881	56670	16052	121603	69251	2.9	190	60	333
Tangail 250 bed District Hospital	250	16345	24535	10113	50993	379	289	487	1155	89089	117874	38275	245238	133243	2.68	146	140	672
Khulna division																		
Bagerhat District Hospital	100	5981	6750	1551	14282	124	100	84	308	62994	64533	21842	149369	45413	3.58	124.42	39	409
Chuadanga District Hospital	100	9022	14144	5151	28317	258	232	96	586	56017	86829	39280	182126	65880	2.4	180	78	499
Jessore 250-bed General Hospital	278	19642	20777	4985	45404	943	560	249	1752	107227	150452	43331	301010	133619	2.9	131.68	124	825
Jhenaidah District Hospital	100	8176	16467	3116	27759	149	147	52	348	65875	87607	39309	192791	24643	1	165	76	528
Khulna General Hospital	150	3479	5307	1830	10616	66	42	18	126	57652	92615	22672	172939	44158	5.44	80.7	29	474
Kushtia 250-bed General Hospital	250	18119	17774	10105	45998	607	381	102	1090	91483	110120	75832	277435	157071	3.42	172.24	126	760
Magura District Hospital	100	8568	10349	6291	25208	241	147	125	513	51705	56564	46117	154386	84775	2.9	232.26	69	423
Meherpur District Hospital	250	6639	11255	4943	22837	127	95	140	362	44812	83679	43515	172006	22787	2.54	161.74	63	471
Narail District Hospital	100	6818	8546	2848	18212	123	85	72	280	46938	49139	23861	119938	47479	3.49	130.07	50	329
Satkhira District Hospital	100	7530	8487	5220	21237	284	213	308	805	83701	106287	44753	234741	84777	4.65	232.36	58	643
Rajshahi division																		
Bogra 250-bed Mohammad Ali District Hospital	250	5349	7483	2734	15566	24	19	11	54	101819	110726	15087	227632	69089	4.55	75.54	43	624
Chapai Nawabganj District Hospital	100	10068	12551	3876	26495	156	119	162	437	53333	70925	46973	171231	22619	3.05	189.46	73	469

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Total patient days	Average length of stay (d)	Bed-occupancy rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Joypurhat District Hospital	100	8159	11785	2277	22221	215	131	55	401	52259	81227	24993	158479	62101	2.96	170.76	61	434
Naogaon District Hospital	100	9121	8353	5022	22496	163	136	6	305	83938	67471	29408	180817	44130	2.6	121	62	495
Natore District Hospital	100	8437	10539	2945	21921	116	94	85	295	66731	74114	50389	191234	52013	2.37	142.5	60	524
Pabna 250-bed General Hospital	250	17941	29340	11813	59094	401	228	480	1109	80693	69286	21091	171070	119483	2.5	130	162	469
Sirajganj General Hospital	100	22599	21445	12085	56129	102	61	205	368	45634	45525	35158	126317	56129	3.35	154	154	346
Rangpur division																		
Dinajpur General Hospital	250	3911	9586	2492	15989	27	27	26	80	65760	65313	8324	139397	67971	3.17	74.54	44	382
Gaibandha District Hospital	100	18333	28675	4154	51162	239	68	144	451	58782	65869	28608	153259	51162	4.66	140	140	420
Kurigram District Hospital	100	10632	11530	3372	25534	250	208	208	666	67219	83370	32574	183163	61231	2.82	168	70	502
Lalmonirhat District Hospital	100	4015	5034	1524	10573	42	37	57	136	53068	63193	7155	123416	30667	2.9	84.1	29	338
Nilphamari District Hospital	100	9011	16338	2870	28219	61	79	61	201	45793	59540	56898	162231	58192	1.92	159.43	77	444
Panchagarh 100-bed District Sadar Hospital	100	4680	6325	2519	13524	137	83	22	242	27994	41709	22132	91835	31360	2.86	85.91	37	252
Thakurgaon District Hospital	100	7462	9658	17481	34601	142	109	384	635	48697	69215	39412	157324	83478	2.15	228.89	95	431
Sylhet division																		
Habiganj District Hospital	100	11453	16445	10379	38277	173	132	419	724	55350	61483	48048	164881	76417	2.03	209	105	452
Maulvibazar 250-bed District Sadar Hospital	250	10918	12833	5754	29505	128	93	100	321	84799	100824	25975	211598	66612	2.26	72.99	81	580
Sunamganj 250-bed District Sadar Hospital	250	5907	6711	2928	15546	84	75	92	251	46644	52377	41656	140677	47119	3.03	51.63	43	385
Shahid Shamsuddin Hospital District Hospital	100	935	1411	5	2351	1	0	0	1	48842	56427	10516	115785	23717	9.33	64.98	6	317

Number of hospital beds, admissions, deaths, outdoor visits, average length of stay, bed-occupancy rates, hospital death rates, average daily admissions, and outdoor visits in upazila hospitals

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Barisal division																		
Barguna district																		
Amtali Upazila Health Complex	50	2040	2456	486	4982	10	8	6	24	9657	14638	6913	31208	3	64.09	0.5	13.6	85.5
Bamna Upazila Health Complex	31	764	734	271	1769	13	6	3	22	15658	14756	4138	34552	3.93	61.56	1.2	4.8	94.7
Betagi Upazila Health Complex	50	899	896	388	2183	3	2	6	11	8421	7834	2258	18513	4.43	52.34	0.5	6.0	50.7
Pathargatha Upazila Health Complex	50	1527	1726	798	4051	15	19	15	49	6827	7152	2969	16948	3.83	63.83	1.2	11.1	46.4
Barisal district																		
Agailjhara Upazila Health Complex	50	1046	1119	890	3055	8	11	2	21	4174	5511	5246	14931	3.38	57	0.7	8.4	40.9
Babuganj Upazila Health Complex	31	231	387	158	776	0	0	0	0	4833	7106	5421	17360	6.3	42.32	0.0	2.1	47.6

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Bakerganj Upazila Health Complex	31	1376	1490	687	3553	5	0	2	7	13072	118385	8720	140177	2.85	89.26	0.2	9.7	384.0
Banaripara Upazila Health Complex	50	1027	2802	707	4536	3	4	0	7	10635	13090	7609	31334	2.1	59	0.2	12.4	85.8
Gournadi Upazila Health Complex	50	2849	2412	1969	7230	21	4	3	28	12065	11987	13841	37893	3.55	84	0.4	19.8	103.8
Hijla Upazila Health Complex	31	1019	1157	502	2678	6	5	2	13	6540	8886	3333	18759	4.88	94	0.5	7.3	51.4
Mehendiganj Upazila Health Complex	31	1674	1701	663	4038	9	9	11	29	9275	10967	11162	31404	2.58	77	0.7	11.1	86.0
Muladi Upazila Health Complex	50	1235	1473	102	2810	5	8	2	15	5508	6682	4675	16865	5	61.43	0.5	7.7	46.2
Wazirpur Upazila Health Complex	50	1465	1780	827	4072	5	2	2	9	7404	12476	6519	26399	4.38	96	0.2	11.2	72.3
Bhola district																		
Borhanuddin Upazila Health Complex	50	2497	3740	3641	9878	13	7	3	23	15363	21480	14736	51579	1.81	101	0.2	27.1	141.3
Charfession Upazila Health Complex	50	3776	5161	3989	12926	31	34	45	110	22333	23782	18311	64426	2.23	157	0.9	35.4	176.5
Daulatkhan Upazila Health Complex	50	1449	2025	1629	5103	10	8	8	26	12245	14474	6795	33514	2.75	77	0.5	14.0	91.8
Lalmohan Upazila Health Complex	50	2911	3121	1669	7701	14	17	7	38	16514	21666	13390	51570	2	101	0.5	21.1	141.3
Manpura Upazila Health Complex	31	593	749	355	1697	2	2	2	6	16695	21401	10435	48531	3.45	52	0.4	4.6	133.0
Tajumuddin Upazila Health Complex	31	952	836	617	2405	5	3	3	11	25009	24617	16102	65728	3.16	67	0.5	6.6	180.1
Jhalokathi district																		
Kathalia Upazila Health Complex	31	926	1000	256	2182	6	8	0	14	16701	22505	16825	56031	6	98.12	0.6	6.0	153.5
Nalchithi Upazila Health Complex	50	1305	1893	485	3683	7	5	5	17	19758	20628	11417	51803	3	66	0.5	10.1	141.9
Rajapur Upazila Health Complex	50	1464	1655	313	3432	5	3	3	11	11551	17054	12387	40992	3.79	71.17	0.3	9.4	112.3
Patuakhali district																		
Bauphal Upazila Health Complex	31	1353	1552	525	3430	7	8	1	16	23612	27042	7014	57668	3.9	120.1	0.5	9.4	158.0
Dashmina Upazila Health Complex	31	1717	2095	833	4645	6	7	2	15	17825	28170	6904	52899	2.5	93.8	0.3	12.7	144.9
Dumki Upazila Health Complex	31	506	526	40	1072	1	0	0	1	6331	12298	2429	21058	1.7	85	0.1	2.9	57.7
Galachipa Upazila Health Complex	50	2309	1927	1156	5392	12	10	7	29	5858	9267	6882	22007	2.9	88.4	0.5	14.8	60.3
Kalapara Upazila Health complex	50	2237	3960	1120	7317	12	11	7	30	12142	16346	5068	33556	2.6	105.5	0.4	20.0	91.9
Mirzaganj Upazila Health Complex	50	943	850	126	1919	7	4	1	12	7249	7146	2245	16640	4	0.51	0.6	5.3	45.6
Pirojpur district																		
Bhandaria Upazila Health Complex	31	1713	2015	505	4233	9	5	1	15	13378	16445	3409	33232	2.9	85	0.4	11.6	91.0
Kawkhali Upazila Health Complex	31	737	825	140	1702	7	4	1	12	13510	18903	4649	37062	4	57.31	0.7	4.7	101.5
Mathbaria Upazila Health Complex	50	2460	3313	2125	7898	18	19	35	72	5942	7887	7620	21449	2.64	89	0.9	21.6	58.8
Nazirpur Upazila Health Complex	50	1095	2072	593	3760	3	6	0	9	11665	13092	6228	30985	4.4	128.9	0.2	10.3	84.9
Nesarabad Upazila Health Complex	50	0	0	0	0	0	0	0	0	15235	24000	6562	45797	2.02	59.55	0.0	0.0	125.5
Zianagar Uazila Health Complex	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Chittagong division																		
Bandarban district																		
Alikadam Upazila Health Complex	31	1456	1533	152	3141	7	4	4	15	21246	26689	10023	57958	1.94	53.38	0.5	8.6	158.8
Lama Upazila Health Complex	31	2864	2979	1547	7390	20	10	13	43	23337	29044	6135	58516	4.41	196.8	0.6	20.2	160.3

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Nykongchari Upazila Health Complex	31	1500	1000	2073	4573	3	1	4	8	5875	11435	11433	28743	1.75	40.41	0.2	12.5	78.7
Rowangchari Upazila Health Complex	10	252	287	60	599	0	0	0	0	4188	3790	1271	9249	2.55	38.19	0.0	1.6	25.3
Ruma Upazila Health Complex	10	528	439	254	1221	1	1	2	4	5894	4901	4127	14922	1.01	29	0.3	3.3	40.9
Thanchi Upazila Health Complex	31	48	36	12	96	0	0	0	0	2205	2603	1023	5831	1.32	3.48	0.0	0.3	16.0
Brahmanbaria district																		
Akhaura Upazila Health Complex	31	1223	2221	370	3814	13	7	5	25	17347	24876	16447	58670	1.9	62.99	0.7	10.4	160.7
Ashugonj Upazila Health Complex	0	0	0	0	0	0	0	0	0	3958	7322	3405	14685	0	0	0.0	0.0	40.2
Bancharampur Upazila Health Complex	31	1114	1337	436	2887	8	1	1	10	24891	28858	11036	64785	3.25	83	0.3	7.9	177.5
Kashba Upazila Health Complex	31	1673	2113	506	4292	2	1	0	3	19758	26422	16783	62963	2.88	52.44	0.1	11.8	172.5
Nabinagar Upazila Health Complex	31	1635	1740	1119	4494	9	10	11	30	21607	28531	17502	67640	1.02	79.82	0.7	12.3	185.3
Nasimagar Upazila Health Complex	50	1810	1490	2020	5320	11	9	6	26	18736	21044	8578	48358	2.64	76.84	0.5	14.6	132.5
Sarail Upazila Health Complex	50	1985	2325	1219	5529	1	4	5	10	27527	32202	11943	71672	1.8	52	0.2	15.1	196.4
Chandpur district																		
Faridganj Upazila Health Complex	31	1611	1314	446	3371	3	2	0	5	10365	12872	8061	31298	2.07	64	0.1	9.2	85.7
Haimchar Upazila Health Complex	31	987	1128	443	2558	7	2	0	9	18215	27126	9069	54410	3.7	86.79	0.4	7.0	149.1
Haziganj Upazila Health Complex	50	1679	1786	865	4330	25	20	36	81	24542	15504	14180	54226	2.99	58.34	1.9	11.9	148.6
Kachua Upazila Health Complex	50	1948	2188	510	4646	4	2	3	9	8249	11495	2451	22195	2.9	73.5	0.2	12.7	60.8
Matlab(Daxin) Upazila Health Complex	50	1919	3289	970	6178	9	7	0	16	9956	16276	11943	38175	2.6	87.42	0.3	16.9	104.6
Matlab(Uttar) Upazila Health Complex	31	582	512	120	1214	0	0	0	0	12069	13300	9563	34932	6.84	68.75	0.0	3.3	95.7
Saharasthi Upazila Health Complex	50	1537	3074	1153	5764	19	9	9	37	11527	21812	8334	41673	2.5	78.45	0.6	15.8	114.2
Chittagong district																		
Anwara Upazila Health Complex	50	4297	4530	4022	12849	1	2	3	6	30778	31384	19211	81373	2.33	99	0.0	35.2	222.9
Banshkhali Upazila Health Complex	50	1875	2368	2676	6919	12	10	18	40	15492	32951	11553	59996	2.1	74.11	0.6	19.0	164.4
Boalkhali Upazila Health Complex	50	1123	3567	1087	5777	4	4	1	9	24003	37752	29844	91599	1.22	63.26	0.2	15.8	251.0
Chandanaish Upazila Health Complex	50	2851	1452	1152	5455	18	5	4	27	24507	23114	25623	73244	3	87	0.5	14.9	200.7
Fatikchari Upazila Health Complex	31	1008	5220	3372	9600	1	2	2	5	16562	32941	28449	77952	3	102	0.1	26.3	213.6
Hathazari Upazila Health Complex	50	2015	1517	2019	5551	3	1	1	5	19061	25936	37744	82741	2.27	71.38	0.1	15.2	226.7
Lohagara Upazila Health Complex	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Mirarsarai Upazila Health Complex	50	1320	4018	1660	6998	15	14	4	33	24131	33784	20895	78810	1.59	59.27	0.5	19.2	215.9
Patiya Upazila Health Complex	50	1332	4946	3576	9854	8	8	6	22	32118	29050	18950	80118	1.9	102	0.2	27.0	219.5
Rangunia Upazila Health Complex	50	1540	2295	2143	5978	12	10	6	28	22090	21137	16450	59677	2.25	76	0.5	16.4	163.5
Roujan Upazila Health Complex	31	3756	4863	5896	14515	9	11	10	30	27502	33351	14648	75501	2.55	82.04	0.2	39.8	206.9
Sandwip Upazila Health Complex	31	806	815	230	1851	11	9	0	20	18285	20315	18040	56640	2.75	60.27	1.1	5.1	155.2
Satkania Upazila Health Complex	31	1870	2811	1700	6381	9	10	1	20	21608	22122	18864	62594	1.85	90	0.3	17.5	171.5
Sitakunda Upazila Health Complex	50	2636	3976	1578	8190	6	5	2	13	32090	47641	10556	90287	1.87	74	0.2	22.4	247.4

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Comilla district																		
Barura Upazila Health Complex	31	942	1417	812	3171	6	4	7	17	9363	28012	7346	44721	2.5	70	0.5	8.7	122.5
Brahmmanpara Upazila Health Complex	50	912	1125	804	2841	3	4	1	8	3913	9925	6219	20057	3.32	83.57	0.3	7.8	55.0
Burichong Upazila Health Complex	31	1460	1451	590	3501	4	8	6	18	6315	7202	2933	16450	2.1	64.84	0.5	9.6	45.1
Chaddagram Upazila Health Complex	50	3541	5032	0	8573	3	6	3	12	39376	42501	40469	122346	1.94	110.9	0.1	23.5	335.2
Chandina Upazila Health Complex	31	2791	3821	1943	8555	21	9	4	34	13993	19537	11954	45484	1.8	120	0.4	23.4	124.6
Comilla Sadar Daxin Upazila Health Complex	31	0	0	0	0	0	0	0	0	4921	5752	5280	15953	0	0	0.0	0.0	43.7
Daudkandi Upazila Health Complex	31	2130	4054	329	6513	5	6	0	11	29418	45958	19111	94487	3.8	75.89	0.2	17.8	258.9
Debidwar Upazila Health Complex	50	3170	3086	1612	7868	12	13	11	36	25350	33786	20810	79946	2.28	101.16	0.5	21.6	219.0
Homna Upazila Health Complex	50	2168	3187	1050	6405	16	11	4	31	12200	23014	17053	52267	2.43	80	0.5	17.5	143.2
Laksham Upazila Health Complex	50	2045	3003	812	5860	11	2	2	15	7426	10259	3789	21474	1.86	61.41	0.3	16.1	58.8
Meghna Upazila Health Complex	31	252	205	20	477	2	0	0	2	3599	3894	2141	9634	6	28	0.4	1.3	26.4
Monoharganj Upazila Health Complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Muradnagar Upazila Health Complex	50	2283	2511	1564	6358	10	9	11	30	21133	27832	13934	62899	2.61	82.69	0.5	17.4	172.3
Nangolkot Upazila Health Complex	50	1637	1835	1537	5009	8	4	4	16	10786	18725	14394	43905	2.28	68	0.3	13.7	120.3
Titas Upazila Health Complex	31	848	1095	384	2327	1	1	1	3	12909	18890	9498	41297	9.15	45.82	0.1	6.4	113.1
Cox's Bazar district																		
Chakaria Upazila Health Complex	50	3850	4151	4493	12494	2	3	6	11	33389	38468	26834	98691	2.76	133	0.1	34.2	270.4
Kutubdia Upazila Health Complex	50	1958	1825	1080	4863	6	3	2	11	14705	16767	9475	40947	1.58	45.2	0.2	13.3	112.2
Moheshkhali Upazila Health Complex	50	5904	7320	3101	16325	5	4	7	16	15315	20942	8645	44902	0.97	104	0.1	44.7	123.0
Pekua Upazila Health Complex	31	879	585	84	1548	1	1	0	2	17324	12328	5210	34862	2	55	0.1	4.2	95.5
Ramu Upazila Health Complex	31	1570	2814	1028	5412	7	4	7	18	27396	32861	19564	79821	2.15	103	0.3	14.8	218.7
Teknaf Upazila Health Complex	50	2346	2716	1053	6115	0	0	3	3	16817	27926	17030	61773	1	38.2	0.0	16.8	169.2
Ukhyia Upazila Health Complex	50	1453	2454	2065	5972	7	1	2	10	20793	23388	35806	79987	1.42	75.2	0.2	16.4	219.1
Feni district																		
Chhagalnaya Upazila Health Complex	50	1708	2877	2122	6707	0	1	0	1	16220	17123	18743	52086	2.7	99	0.0	18.4	142.7
Daganbhuiya Upazila Health Complex	31	1751	2580	822	5153	7	0	0	7	17360	50748	29716	97824	3.17	100.26	0.1	14.1	268.0
Fulgazi Upazila Health Complex	31	1080	2863	227	4170	6	2	0	8	17796	28949	10280	57025	2	82	0.2	11.4	156.2
Parsuram Upazila Health Complex	50	1673	3643	1212	6528	7	4	3	14	16158	21872	12427	50457	2.75	98.2	0.2	17.9	138.2
Sonagazi Upazila Health Complex	31	1570	4371	1871	7812	13	11	6	30	26106	32106	26132	84344	2.13	147	0.4	21.4	231.1
Khagrachhari district																		
Dighinala Upazila Health Complex	10	1312	1276	645	3233	4	2	4	10	10960	13205	2881	27046	12	8.3	0.3	8.9	74.1
Lakshmichari Upazila Health Complex	31	253	335	208	796	3	1	2	6	4134	5163	4544	13841	5.14	35.93	0.8	2.2	37.9
Manikchari Upazila Health Complex	10	884	1390	337	2611	5	11	5	21	9647	21269	18075	48991	2.19	157	0.8	7.2	134.2
Matiranga Upazila Health Complex	31	980	1170	621	2771	25	39	47	111	25321	30759	13760	69840	2.46	50.33	4.0	7.6	191.3
Mohalchari Upazila Health Complex	31	462	740	201	1403	2	0	1	3	12884	14382	8651	35917	2.59	28.26	0.2	3.8	98.4

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Panchari Upazila Health Complex	10	1546	1525	239	3310	10	3	4	17	9057	20650	8069	37776	1.68	84.37	0.5	9.1	103.5
Ramgarh Upazila Health Complex	31	916	910	303	2129	15	7	8	30	16005	26423	9961	52389	2.61	49.27	1.4	5.8	143.5
Lakshmipur district																		
Kamolnagar Upazila Health Complex	31	2277	2256	1467	6000	1	3	0	4	32404	37505	8322	78231	2.84	145.16	0.1	16.4	214.3
Raipur Upazila Health Complex	50	1916	2435	328	4679	9	8	7	24	34555	40262	8942	83759	2.6	72.7	0.5	12.8	229.5
Ramganj Upazila Health Complex	31	2110	2293	665	5068	3	6	2	11	17424	24304	5773	47501	2.51	86	0.2	13.9	130.1
Ramgati Upazila Health Complex	31	1562	1156	1547	4265	2	4	2	8	18471	29316	14890	62677	2.8	47.8	0.2	11.7	171.7
Noakhali district																		
Begumganj Upazila Health Complex	31	850	908	269	2027	3	0	0	3	17693	26832	12227	56752	4	63.07	0.1	5.6	155.5
Chatkhil Upazila Health Complex	50	1814	3250	1220	6284	10	10	3	23	16120	19947	8554	44621	2.43	83.56	0.4	17.2	122.2
Companiganj Upazila Health Complex	50	2854	3557	2443	8854	8	10	10	28	24860	38185	30625	93670	2.8	104.4	0.3	24.3	256.6
Hatiya Upazila Health Complex	50	1751	1356	1656	4763	44	18	57	119	12512	17194	14925	44631	2.78	78.61	2.5	13.0	122.3
Kabirhat Upazila Health Complex	31	0	0	0	0	0	0	0	0	5737	10478	5535	21750	0	0	0.0	0.0	59.6
Senbag Upazila Health Complex	50	1300	1591	622	3513	3	0	2	5	11298	18034	12619	41951	2.87	55	0.1	9.6	114.9
Sonaimuri Upazila Health Complex	50	1415	2350	429	4194	2	2	0	4	10462	14887	4212	29561	2.51	53.74	0.1	11.5	81.0
Subarnachar Upazila Health Complex	31	2191	3926	130	6247	0	0	8	8	12213	11070	2431	25714	2.86	31	0.1	17.1	70.4
Rangamati district																		
Baghaichari Upazila Health Complex	31	626	274	223	1123	10	7	2	19	8317	9638	4471	22426	2.24	32.15	1.7	3.1	61.4
Barkol Upazila Health Complex	10	67	97	90	254	1	0	0	1	3571	4616	603	8790	2.08	2.73	0.4	0.7	24.1
Belaichari Upazila Health Complex	10	482	496	192	1170	0	2	3	5	5068	5500	3624	14192	2.95	40.54	0.4	3.2	38.9
Juraichari Upazila Health Complex	10	183	171	44	398	0	0	1	1	3560	3153	943	7656	4.91	49.64	0.3	1.1	21.0
Kaptai Upazila Health Complex	31	644	827	545	2016	1	2	2	5	12365	13948	4696	31009	3.43	60.79	0.2	5.5	85.0
Kawkhali Upazila Health Complex	10	444	528	254	1226	1	0	0	1	5985	9517	3818	19320	2.35	78.63	0.1	3.4	52.9
Langadu Upazila Health Complex	31	566	711	238	1515	5	5	3	13	11543	15500	5018	32061	3.8	55.6	0.9	4.2	87.8
Naniarchar Upazila Health Complex	10	230	260	287	777	1	2	2	5	6375	8288	2917	17580	1.01	57.21	0.6	2.1	48.2
Rajstali Upazila Health Complex	10	194	214	83	491	0	1	0	1	6223	6069	2067	14359	2.88	39.09	0.2	1.3	39.3
Dhaka division																		
Dhaka district																		
Dhamrai Upazila Health Complex	50	1553	2478	366	4397	8	5	0	13	34903	70720	21260	126883	2.91	69.75	0.3	12.0	347.6
Dohar Upazila Health Complex	50	1701	2441	642	4784	11	9	3	23	19572	38248	27197	85017	2.23	84.51	0.5	13.1	232.9
Keraniganj Upazila Health Complex	31	909	1288	406	2603	1	6	0	7	34547	59105	27014	120666	4.36	87.16	0.3	7.1	330.6
Nawabganj Upazila Health Complex	50	2421	3002	2010	7433	20	11	4	35	42945	48389	37661	128995	2.44	102.34	0.5	20.4	353.4
Savar Upazila Health Complex	50	1512	2474	419	4405	4	4	0	8	38149	41703	23112	102964	3.02	65.74	0.2	12.1	282.1
Faridpur district																		
Alfadanga Upazila Health Complex	50	2100	3003	183	5286	12	9	2	23	12311	19615	8237	40163	3.02	78.05	0.4	14.5	110.0
Bhanga Upazila Health Complex	50	2450	3587	405	6442	8	4	1	13	8865	11709	9946	30520	2.25	92.5	0.2	17.6	83.6

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Boalmari Upazila Health Complex	50	3935	5017	2166	11118	15	14	20	49	22427	25850	28369	76646	1.81	110.72	0.4	30.5	210.0
Charbhadrason Upazila Health Complex	31	736	971	517	2224	7	3	0	10	8270	10334	5558	24162	1	20	0.4	6.1	66.2
Modhukhali Upazila Health Complex	31	2069	2968	895	5932	7	2	1	10	14029	28171	17847	60047	1.68	88	0.2	16.3	164.5
Nagarkanda Upazila Health Complex	50	2208	2490	579	5277	8	5	0	13	5055	11176	7564	23795	3.2	92.91	0.2	14.5	65.2
Sadarpur Upazila Health Complex	50	0	0	0	0	0	0	0	0	3835	12210	7782	23827	2.79	51	0.0	0.0	65.3
Gazipur district																		
Kaliakair Upazila Health Complex	50	1964	2998	342	5304	5	4	2	11	18289	29559	11075	58923	2.4	90.05	0.2	14.5	161.4
Kaliganj Upazila Health Complex, Gazipur	50	2224	3026	473	5723	10	6	0	16	37435	41263	13105	91803	2.32	66.96	0.3	15.7	251.5
Kapasia Upazila Health Complex	50	1741	2760	307	4808	10	3	2	15	26120	33429	9232	68781	2.86	71.85	0.3	13.2	188.4
Sreepur Upazila Health Complex	50	1517	1823	653	3993	6	3	2	11	24019	35733	20585	80337	2.2	45	0.3	10.9	220.1
Gopalganj district																		
Kassiani Upazila Health Complex	31	1234	1778	680	3692	7	2	2	11	11063	15599	5315	31977	25.01	61.3	0.3	10.1	87.6
Kotwalipara Upazila Health Complex	50	1893	2798	636	5327	15	23	5	43	15411	23648	10995	50054	3	68	0.8	14.6	137.1
Mukshedpur Upazila Health Complex	31	5124	6065	2765	13954	19	16	11	46	34307	37698	23933	95938	2.31	175	0.3	38.2	262.8
Tungipara Upazila Health Complex	50	1973	2155	2280	6408	8	10	4	22	19135	41537	32247	92919	2.94	103.73	0.3	17.6	254.6
Jamalpur district																		
Bakshiganj Upazila Health Complex	31	1824	2989	450	5263	10	7	3	20	38058	37378	12062	87498	3	97	0.4	14.4	239.7
Dewanganj Upazila Health Complex	50	1513	1837	936	4286	11	5	3	19	14844	16397	10525	41766	4	97	0.4	11.7	114.4
Islampur Upazila Health Complex	50	1458	1775	464	3697	5	1	0	6	43570	49631	10947	104148	2.31	47	0.2	10.1	285.3
Madarganj Upazila Health Complex	50	1365	1412	403	3180	7	7	2	16	6504	8616	1377	16497	3	57	0.5	8.7	45.2
Melandaha Upazila Health Complex	50	1252	1440	204	2896	1	2	0	3	36857	44705	11413	92975	3.37	49	0.1	7.9	254.7
Sarisabari Upazila Health Complex	50	3013	4149	1007	8169	16	7	2	25	18284	22857	2568	43709	2	101	0.3	22.4	119.8
Kishoreganj district																		
Astagram Upazila Health Complex	50	976	1233	1114	3323	7	6	9	22	15149	23220	12040	50409	2.7	46.9	0.7	9.1	138.1
Bajitpur Upazila Health Complex	31	1865	2193	1451	5509	5	7	0	12	31484	48794	32841	113119	2.5	107.76	0.2	15.1	309.9
Bhairab Upazila Health Complex	50	1512	3209	1165	5886	21	12	4	37	23082	41183	26461	90726	2.57	82.96	0.6	16.1	248.6
Hossainpur Upazila Health Complex	50	2968	3939	1351	8258	3	0	0	3	32069	23165	17503	72737	1.78	80.17	0.0	22.6	199.3
Itna Upazila Health Complex	31	1038	1059	523	2620	6	6	8	20	21700	40413	11864	73977	3.68	85	0.8	7.2	202.7
Karimganj Upazila Health Complex	50	2285	2585	1083	5953	10	5	0	15	19001	29021	21313	69335	2.1	68	0.3	16.3	190.0
Katiadi Upazila Health Complex	50	3532	6142	1832	11506	19	14	6	39	37529	48009	31889	117427	1.73	93.98	0.3	31.5	321.7
Kuliarchar Upazila Health Complex	31	1315	1166	620	3101	2	1	2	5	32160	38978	15773	86911	2.94	80.41	0.2	8.5	238.1
Mithamoin Upazila Health Complex	31	631	622	171	1424	2	2	4	8	29831	38703	7987	76521	3.2	39	0.6	3.9	209.6
Nikhli Upazila Health Complex	31	1401	1475	796	3672	2	2	3	7	52947	50816	7072	110835	2.2	69	0.2	10.1	303.7
Pakundia Upazila Health Complex	50	1549	1483	802	3834	8	3	2	13	24065	34135	19698	77898	4.2	88.78	0.3	10.5	213.4
Tarail Upazila Health Complex	50	1953	1732	1377	5062	17	10	13	40	24670	14739	2450	41859	2.7	72.23	0.8	13.9	114.7
Madaripur district																		

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Kalkini Upazila Health Complex	50	1379	2028	1201	4608	4	3	5	12	15717	18311	12197	46225	3.02	76	0.3	12.6	126.6
Rajoir Upazila Health Complex	50	2854	3001	665	6520	49	22	12	83	17801	19284	6495	43580	2.46	88	1.3	17.9	119.4
Shibchar Upazila Health Complex	50	1673	1231	379	3283	0	4	0	4	10873	15485	4416	30774	3.22	72	0.1	9.0	84.3
Manikganj district																		
Daulatpur Upazila Health Complex	31	3414	3602	1486	8502	9	6	2	17	25095	27364	22444	74903	3.65	64.73	0.2	23.3	205.2
Ghior Upazila Health Complex	31	1416	1468	356	3240	2	2	0	4	20366	26007	12220	58593	3.4	78	0.1	8.9	160.5
Harirampur Upazila Health Complex	31	985	1847	458	3290	7	2	0	9	14194	22289	9473	45956	3	81.45	0.3	9.0	125.9
Saturia Upazila Health Complex	50	1581	2034	233	3848	9	3	2	14	21325	36444	8515	66284	4	117	0.4	10.5	181.6
Shibalaya Upazila Health Complex	31	2011	2869	331	5211	6	7	0	13	21936	36568	4228	62732	2.56	85.41	0.2	14.3	171.9
Singair Upazila Health Complex	50	1554	1863	0	3417	4	3	0	7	16925	33422	8323	58670	2.3	58.29	0.2	9.4	160.7
Munshiganj district																		
Gazaria Upazila Health Complex	50	2377	3790	503	6670	8	4	2	14	21275	36343	18635	76253	2.33	81.67	0.2	18.3	208.9
Louhajang Upazila Health Complex	50	914	1418	301	2633	2	4	2	8	14580	27417	14566	56563	3	60	0.3	7.2	155.0
Serajdikhan Upazila Health Complex	50	1160	2062	645	3867	6	2	0	8	30509	54337	4733	89579	2.72	56	0.2	10.6	245.4
Sreenagar Upazila Health Complex	50	1850	2125	502	4477	6	5	4	15	20027	40895	28591	89513	3	75	0.3	12.3	245.2
Tungibari Upazila Health Complex	50	1751	2783	1508	6042	5	2	0	7	29532	52324	40099	121955	2	67	0.1	16.6	334.1
Mymensingh district																		
Bhaluka Upazila Health Complex	50	1785	3387	1292	6464	4	6	2	12	10430	10290	6728	27448	3	99	0.2	17.7	75.2
Dhubaura Upazila Health Complex	31	1569	2089	1254	4912	9	7	15	31	11600	15511	6802	33913	2	93	0.6	13.5	92.9
Fulbaria Upazila Health Complex	31	1858	2331	669	4858	2	1	2	5	8129	12796	10094	31019	3	74	0.1	13.3	85.0
Fulpur Upazila Health Complex	50	2454	4122	2152	8728	9	8	3	20	13930	15959	14300	44189	2	92	0.2	23.9	121.1
Gofargaon Upazila Health Complex	50	4800	4260	2063	11123	10	7	4	21	26017	21950	19965	67932	2	78	0.2	30.5	186.1
Gouripur Upazila Health Complex	31	1826	2720	1128	5674	8	3	1	12	18650	21541	13151	53342	2	83	0.2	15.5	146.1
Haluaghat Upazila Health Complex	50	1895	3585	891	6371	9	9	5	23	17885	18679	8217	44781	3	97	0.4	17.5	122.7
Iswarganj Upazila Health Complex	50	2627	4219	1734	8580	3	9	6	18	20174	25913	8902	54989	2	98	0.2	23.5	150.7
Muktagacha Upazila Health Complex	31	2014	4611	651	7276	6	4	0	10	33257	45021	16719	94997	1.42	83	0.1	19.9	260.3
Nandail Upazila Health Complex	50	2493	3381	1313	7187	10	2	15	27	12918	18019	9144	40081	2	101	0.4	19.7	109.8
Trisal Upazila Health Complex	50	1901	3015	295	5211	3	1	0	4	41539	43530	14570	99639	3	71	0.1	14.3	273.0
Narayanganj district																		
Araihazar Upazila Health Complex	31	1304	1718	87	3109	1	2	0	3	41185	71009	7247	119441	2.59	71.33	0.1	8.5	327.2
Bandar Upazila Health Complex	31	308	414	192	914	1	0	0	1	12161	48834	17517	78512	5	73.11	0.1	2.5	215.1
Rupganj Upazila Health Complex	50	1285	1673	4	2962	5	1	0	6	16062	19225	12770	48057	5.28	77.55	0.2	8.1	131.7
Sonargaon Upazila Health Complex	31	1201	1156	314	2671	3	2	1	6	35975	46041	13202	95218	5	72	0.2	7.3	260.9
Narsingdi district																		
Belabo Upazila Health Complex	31	1767	2117	310	4194	8	4	0	12	23669	45662	12242	81573	2.88	98	0.3	11.5	223.5
Monohardi Upazila Health Complex	50	1315	2506	930	4751	10	6	4	20	28406	49325	15916	93647	3	95	0.4	13.0	256.6

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Palash Upazila Health Complex	31	803	1699	372	2874	3	4	0	7	20636	52800	25942	99378	3.69	77.56	0.2	7.9	272.3
Raipura Upazila Health Complex	31	1221	2013	671	3905	1	2	0	3	15995	17035	14297	47327	2.46	74	0.1	10.7	129.7
Shibpur Upazila Health Complex	31	869	1078	543	2490	3	0	0	3	20308	45666	10660	76634	4.1	65	0.1	6.8	210.0
Netrokona district																		
Atpara Upazila Health Complex	31	1262	1311	128	2701	6	4	2	12	36505	42982	18163	97650	4	84	0.4	7.4	267.5
Barhatta Upazila Health Complex	31	1501	1627	812	3940	4	6	10	20	23082	38570	18875	80527	2.5	75.7	0.5	10.8	220.6
Durgapur Upazila Health Complex	50	2441	2512	0	4953	23	15	20	58	24610	35341	21377	81328	2.1	53.9	1.2	13.6	222.8
Kalmakanda Upazila Health Complex	50	2067	2202	1192	5461	5	3	13	21	9729	12749	5761	28239	2.88	87.8	0.4	15.0	77.4
Kendua Upazila Health Complex	50	1625	2294	1228	5147	9	12	20	41	12459	15462	7231	35152	3	75	0.8	14.1	96.3
Khaliajhuir Upazila Health Complex	31	765	653	203	1621	2	1	0	3	13364	18593	13166	45123	5.22	61.68	0.2	4.4	123.6
Madan Upazila Health Complex	50	1774	1777	833	4384	8	13	3	24	7414	7055	3828	18297	3	77	0.5	12.0	50.1
Mohanganj Upazila Health Complex	50	2318	3336	788	6442	15	9	16	40	23419	23165	2721	49305	2.21	76.25	0.6	17.6	135.1
Purbadhala Upazila Health Complex	50	3124	3516	1323	7963	10	8	10	28	11094	11706	3689	26489	3.11	136.34	0.4	21.8	72.6
Rajbari district																		
Baliakandi Upazila Health Complex	31	1481	1786	340	3607	4	3	0	7	17197	25512	5357	48066	4.4	73.7	0.2	9.9	131.7
Goalanda Upazila Health Complex	50	3193	3590	1106	7889	17	2	2	21	20956	34858	12882	68696	2.1	90.1	0.3	21.6	188.2
Kalukhali Upazila Health Complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Pangsha Upazila Health Complex	50	3458	3378	883	7719	32	23	9	64	16548	23175	7022	46745	3.2	94.2	0.8	21.1	128.1
Shariatpur district																		
Bhedarganj Upazila Health Complex	31	1483	1455	1008	3946	6	6	16	28	17026	19827	12638	49491	2.79	96.69	0.7	10.8	135.6
Damuddya Upazila Health Complex	31	1393	1796	692	3881	18	8	2	28	17927	22078	13868	53873	2.81	80.57	0.7	10.6	147.6
Goshairhat Upazila Health Complex	31	1500	1382	1201	4083	6	14	26	46	17003	28149	23188	68340	2.79	91.57	1.1	11.2	187.2
Naria Upazila Health Complex	31	1521	1848	821	4190	8	5	0	13	12742	21226	5675	39643	2.89	87.33	0.3	11.5	108.6
Zanzira Upazila Health Complex	31	1413	2312	732	4457	14	6	6	26	28433	47110	19943	95486	2.38	97	0.6	12.2	261.6
Sherpur district																		
Jhenaigati Upazila Health Complex	31	1163	1270	270	2703	0	1	0	1	38278	51989	17716	107983	4	56	0.0	7.4	295.8
Nakhla Upazila Health Complex	50	1843	1654	457	3954	3	2	2	7	21378	15432	9459	46269	3.72	80	0.2	10.8	126.8
Nalitabari Upazila Health Complex	31	1534	1407	356	3297	7	8	7	22	29667	43691	7498	80856	4	120	0.7	9.0	221.5
Sribardi Upazila Health Complex	31	1251	1109	304	2664	2	2	0	4	34284	35344	14564	84192	3.16	93	0.2	7.3	230.7
Tangail district																		
Basail Upazila Health Complex	31	1064	1476	324	2864	2	1	0	3	35663	53546	26712	115921	2.64	64	0.1	7.8	317.6
Bhuapur Upazila Health Complex	50	2638	3340	604	6582	18	4	2	24	15103	19682	12674	47459	2.5	88.5	0.4	18.0	130.0
Delduar Upazila Health Complex	31	980	1317	401	2698	0	1	0	1	24603	38746	12176	75525	3.5	62	0.0	7.4	206.9
Dhanbari Upazila Health Complex	0	0	0	0	0	0	0	0	0	6967	23619	3445	34031	0	0	0.0	0.0	93.2
Ghatail Upazila Health Complex	50	2082	3339	841	6262	13	6	2	21	27990	37631	11320	76941	2.87	99	0.3	17.2	210.8
Gopalpur Upazila Health Complex	50	1468	2277	711	4456	6	6	2	14	32397	40846	12947	86190	2.25	54	0.3	12.2	236.1

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Kalihati Upazila Health Complex	50	1998	2553	837	5388	12	5	0	17	18330	17970	7090	43390	3.19	94.79	0.3	14.8	118.9
Mirzapur Upazila Health Complex	31	1002	1482	24	2508	1	1	0	2	22738	28984	17109	68831	3.76	73	0.1	6.9	188.6
Modhupur Upazila Health Complex	50	2743	3873	2089	8705	3	6	2	11	16884	21059	18259	56202	2.1	101	0.1	23.8	154.0
Nagarpur Upazila Health Complex	31	1280	2920	2	4202	8	12	2	22	16221	21098	11499	48818	2	105	0.5	11.5	133.7
Sakhipur Upazila Health Complex	50	2213	4221	1298	7732	14	11	8	33	19335	32171	12202	63708	2.76	94	0.4	21.2	174.5
Khulna division																		
Bagerhat district																		
Chitalmari Upazila Health Complex	31	1515	1541	768	3824	18	16	4	38	15575	18144	9569	43288	3.01	81.45	1.0	10.5	118.6
Fakirhat Upazila Health Complex	31	2936	5175	1061	9172	21	10	1	32	22247	40054	12532	74833	2.36	168.76	0.3	25.1	205.0
Kachua Upazilla Health Complex	50	1084	1728	642	3454	5	3	0	8	16324	32401	20812	69537	6.11	94	0.2	9.5	190.5
Mollahat Upazila Health Complex	31	2274	2268	400	4942	14	8	0	22	22919	37720	10268	70907	2.9	109.91	0.4	13.5	194.3
Mongla Upazila Health Complex	50	1807	2318	263	4388	28	18	1	47	19456	29427	5445	54328	3.65	88.16	1.1	12.0	148.8
Morrelganj Upazila Health Complex	31	1561	2147	644	4352	11	15	2	28	9205	18091	12675	39971	4.52	146.49	0.6	11.9	109.5
Rampal Upazila Health Complex	50	1639	2300	289	4228	20	15	3	38	10332	19646	8050	38028	3.78	85.41	0.9	11.6	104.2
Sarankhola Upazila Health Complex	31	1917	1852	284	4053	15	14	9	38	12986	29322	11630	53938	2.8	102.84	0.9	11.1	147.8
Chuadanga district																		
Alamdanga Upazila Health Complex	31	1788	2553	844	5185	10	6	0	16	28960	35453	16387	80800	3.01	132.77	0.3	14.2	221.4
Damurhuda Upazila Health Complex	31	1725	2310	385	4420	3	1	0	4	19885	32826	8502	61213	2.53	91	0.1	12.1	167.7
Jibannagar Upazila Health Complex	31	2573	3887	1026	7486	15	11	8	34	21816	39792	14892	76500	1.67	106.67	0.5	20.5	209.6
Jessore district																		
Abhoynagar Upazila Health Complex	50	2456	4545	1100	8101	38	35	0	73	38494	53042	11310	102846	2.58	108.26	0.9	22.2	281.8
Bagerpara Upazila Health Complex	50	1758	2298	877	4933	5	5	4	14	10713	14047	6860	31620	2.76	74.55	0.3	13.5	86.6
Chowgacha Upazila Health Complex	50	3094	8302	2312	13708	8	10	9	27	27445	51289	21222	99956	2.58	181	0.2	37.6	273.9
Jhikargacha Upazila Health Complex	50	1338	2380	306	4024	2	9	0	11	15199	29728	16185	61112	2.42	55.74	0.3	11.0	167.4
Keshabpur Upazila Health Complex	50	2571	3741	756	7068	0	0	0	0	13613	15897	13226	42736	2.64	90.89	0.0	19.4	117.1
Monirampur Upazila Health Complex	50	2292	3109	725	6126	19	15	0	34	9971	21460	15020	46451	2.5	83.73	0.6	16.8	127.3
Sarsa Upazila Health Complex	31	1945	2414	240	4599	12	12	0	24	14102	25792	11725	51619	1.6	66	0.5	12.6	141.4
Jhenaidah district																		
Harinakunda Upazila Health Complex	50	2281	3185	1594	7060	21	10	1	32	10085	18688	9901	38674	2.01	78	0.5	19.3	106.0
Kaliganj Upazila Health Complex	50	3132	4072	1764	8968	24	19	14	57	17222	35323	20582	73127	1.85	90	0.6	24.6	200.3
Kotchandpur Upazila Health Complex	50	3024	4008	1467	8499	46	24	8	78	16537	22275	10061	48873	1.66	77.78	0.9	23.3	133.9
Moheshpur Upazila Health Complex	50	2234	2689	641	5564	17	10	3	30	26167	32325	8088	66580	2	62	0.5	15.2	182.4
Sailkupa Upazila Health Complex	31	2592	2960	220	5772	6	7	0	13	20520	21230	1558	43308	2.12	95	0.2	15.8	118.7
Khulna district																		
Batiaghata Upazila Health Complex	31	1845	2645	670	5160	6	15	1	22	13395	26952	13428	53775	2.49	93	0.4	14.1	147.3
Dacope Upazila Health Complex	50	2052	3054	1213	6319	32	26	20	78	11901	18111	7745	37757	6.04	171.69	1.2	17.3	103.4

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Dighalia Upazila Health Complex	31	988	1309	266	2563	4	4	0	8	24564	41497	22051	88112	2.84	64.29	0.3	7.0	241.4
Dumuria Upazila Health Complex	31	1845	2645	670	5160	6	15	1	22	13395	26952	13428	53775	2.49	93	0.4	14.1	147.3
Fultala Upazila Health Complex	50	2521	2895	612	6028	40	32	1	73	16176	28094	6197	50467	3.1	98.2	1.2	16.5	138.3
Koyra Upazila Health Complex	50	1584	2302	444	4330	32	23	5	60	5879	8104	3926	17909	2.86	119.9	1.4	11.9	49.1
Paikgacha Upazila Health Complex	50	1871	3964	885	6720	37	25	9	71	10601	14703	11024	36328	3.57	128	1.1	18.4	99.5
Rupsha Upazila Health Complex	31	1141	1509	350	3000	3	4	0	7	10140	14767	5729	30636	3.41	89.26	0.2	8.2	83.9
Terakhada Upazila Health Complex	31	1204	1820	415	3439	7	1	1	9	22834	26180	6966	55980	3.14	94.8	0.3	9.4	153.4
Kushtia district																		
Bheramara Upazila Health Complex	50	1730	2173	756	4659	9	5	0	14	17968	31979	12440	62387	3	51.96	0.3	12.8	170.9
Daulatpur Upazila Health Complex	50	2014	4891	474	7379	7	7	0	14	14070	32939	8293	55302	2	85.81	0.2	20.2	151.5
Khoksha Upazila Health Complex	50	2164	2840	876	5880	15	13	2	30	8748	8638	6088	23474	2.2	71.79	0.5	16.1	64.3
Kumarkhali Upazila Health Complex	50	2577	3321	1326	7224	18	8	3	29	11498	18013	8705	38216	3.06	124.12	0.4	19.8	104.7
Kushtia (Sadar) Upazila Health Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Mirpur Upazila Health Complex	50	1675	2595	944	5214	6	2	0	8	11115	10911	11603	33629	2	53.18	0.2	14.3	92.1
Magura district																		
Mohammadpur Upazila Health Complex	31	1250	1822	807	3879	8	14	7	29	20763	33510	15550	69823	2.88	98.67	0.7	10.6	191.3
Salika 50-bed Hospital	50	1146	1577	263	2986	4	8	0	12	9176	14931	4709	28816	3	47	0.4	8.2	78.9
Sreepur Upazila Health Complex	31	550	632	432	1614	1	2	0	3	12052	18465	5087	35604	5.09	72.62	0.2	4.4	97.5
Meherpur district																		
Gangni Upazila Health Complex	50	2772	5480	1212	9464	10	9	2	21	46303	73060	10072	129435	1.14	95.4	0.2	25.9	354.6
Mujibnagar Upazila Health Complex	31	763	797	94	1654	2	2	0	4	23135	35516	12015	70666	2.67	38.82	0.2	4.5	193.6
Narail district																		
Kalia Upazila Health Complex	50	1473	2911	873	5257	8	8	4	20	16234	27862	8958	53054	2.34	67.29	0.4	14.4	145.4
Lohagara Upazila Health Complex, Narail	31	1956	3063	172	5191	5	5	0	10	24742	50465	9563	84770	2.31	109.27	0.2	14.2	232.2
Satkhira district																		
Assasuni Upazila Health Complex	31	848	1403	415	2666	6	3	1	10	17357	26049	5861	49267	3.48	80.61	0.4	7.3	135.0
Debhata Upazila Health Complex	50	1117	2725	112	3954	15	13	0	28	12756	23506	8558	44820	4.48	130.7	0.7	10.8	122.8
Kalaroa Upazila Health Complex	50	1788	3021	198	5007	20	13	2	35	15489	31234	11252	57975	3.15	86.33	0.7	13.7	158.8
Kaliganj Upazila Health Complex	50	942	1765	92	2799	15	5	1	21	14143	23265	9078	46486	6.01	87.64	0.8	7.7	127.4
Shyamnagar Upazila Health Complex	50	2831	5436	1684	9951	36	32	25	93	17983	25216	12670	55869	3.21	178.43	0.9	27.3	153.1
Tala Upazila Health Complex	50	1220	2088	1101	4409	23	18	0	41	15762	15683	8136	39581	18557	101.77	0.9	12.1	108.4
Rajshahi division																		
Bogra district																		
Adamdighi Upazila Health Complex	50	1500	2228	266	3994	2	1	0	3	19926	29517	15727	65170	2.41	52.55	0.1	10.9	178.5
Dhunat Upazila Health Complex	50	2642	3780	1108	7530	4	2	3	9	40346	42785	11056	94187	2.3	67.08	0.1	20.6	258.0
Dhupchachia Upazila Health Complex	50	2611	3916	957	7484	14	2	1	17	15856	25761	9459	51076	1.56	75	0.2	20.5	139.9

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Gabtali Upazila Health Complex	50	1317	1513	604	3434	1	1	0	2	10878	24792	6521	42191	3.3	66.1	0.1	9.4	115.6
Kahaloo Upazila Health Complex	50	2118	2736	366	5220	4	3	1	8	21515	35200	7963	64678	3.43	95.22	0.2	14.3	177.2
Nandigram Upazila Health Complex	31	1497	1716	472	3685	2	1	0	3	24106	32179	13193	69478	2.6	85.8	0.1	10.1	190.4
Sariakandi Upazila Health Complex	50	1374	1881	381	3636	6	3	3	12	18891	24018	8617	51526	4.66	97.82	0.3	10.0	141.2
Shajahanpur Upazila Health Complex	31	477	758	101	1336	0	1	0	1	9447	28547	5861	43855	4.56	55.22	0.1	3.7	120.2
Sherpur Upazila Health Complex	31	3015	3507	420	6942	9	6	1	16	33864	68290	17328	119482	2.08	115	0.2	19.0	327.3
Shibganj Upazila Health Complex	50	1706	2457	866	5029	2	2	1	5	4031	5092	2218	11341	2.76	76.89	0.1	13.8	31.1
Sonatala Upazila Health Complex	50	1604	1571	708	3883	13	4	2	19	15802	19392	4377	39571	2.5	81.1	0.5	10.6	108.4
Chapainawabganj district																		
Bholahat Upazila Health Complex	31	761	1306	192	2259	11	3	1	15	14627	17705	12395	44727	3.22	61.08	0.7	6.2	122.5
Gomastapur Upazila Health Complex	31	1677	2267	518	4462	5	7	2	14	27888	28873	6973	63734	1.95	56.34	0.3	12.2	174.6
Nachol Upazila Health Complex	31	1897	2091	598	4586	5	2	0	7	33694	39372	10983	84049	8.54	75	0.2	12.6	230.3
Shibganj Upazila Health Complex	50	1328	2587	2406	6321	4	4	2	10	20707	25161	19777	65645	2	66	0.2	17.3	179.8
Joypurhat district																		
Akkelpur Upazila Health Complex	50	1591	2256	873	4720	9	6	0	15	14145	24352	17481	55978	2.2	67	0.3	12.9	153.4
Kalai Upazila Health Complex	50	1415	3279	789	5483	14	6	2	22	35009	36279	12891	84179	2.92	88.81	0.4	15.0	230.6
Khetlal Upazila Health Complex	50	1214	2799	261	4274	2	0	0	2	21960	32643	7832	62435	2.86	63.54	0.0	11.7	171.1
Panchbibi Upazila Health Complex	50	1378	1910	310	3598	6	2	0	8	9900	14692	3159	27751	2.77	55.03	0.2	9.9	76.0
Naogaon district																		
Atrai Upazila Health Complex	50	1243	2502	637	4382	10	2	1	13	7805	7585	4351	19741	2.1	50	0.3	12.0	54.1
Badalgachi Upazila Health Complex	50	912	1440	360	2712	2	2	0	4	11484	19728	7920	39132	2.75	73.82	0.1	7.4	107.2
Dhamairhat Upazila Health Complex	50	1182	1201	367	2750	6	3	0	9	13689	15070	5807	34566	2.48	29.14	0.3	7.5	94.7
Manda Upazila Health Complex	50	2002	2091	434	4527	5	6	0	11	13413	17714	10526	41653	2.56	61.83	0.2	12.4	114.1
Mohadevpur Upazila Health Complex	50	2095	2729	711	5535	22	12	8	42	15396	17841	10279	43516	1.89	55	0.8	15.2	119.2
Niamatpur Upazila Health Complex	50	1434	1633	625	3692	10	4	0	14	13771	18373	4927	37071	2.84	52.66	0.4	10.1	101.6
Patnitala Upazila Health Complex	50	1380	2509	267	4156	18	11	1	30	6934	10381	6621	23936	3.13	72.69	0.7	11.4	65.6
Porsha Upazila Health Complex	50	651	1060	234	1945	7	2	3	12	7073	10816	6783	24672	4.29	54	0.6	5.3	67.6
Raninagar Upazila Health Complex	31	1509	1899	369	3777	6	0	0	6	12553	23933	13917	50403	2.64	84	0.2	10.3	138.1
Sapahar Upazila Health Complex	50	1680	1894	222	3796	20	14	5	39	13622	15209	6711	35542	2.21	47	1.0	10.4	97.4
Natore district																		
Bagatipara Upazila Health Complex	31	994	1436	160	2590	2	1	0	3	26617	38204	4484	69305	3.2	74.75	0.1	7.1	189.9
Baraigram Upazila Health Complex	31	1005	1490	35	2530	1	0	6	7	37912	48720	8108	94740	2.14	50.93	0.3	6.9	259.6
Gurudashpur Upazila Health Complex	50	3287	3918	1774	8979	27	12	3	42	34620	43593	15690	93903	2.11	56.76	0.5	24.6	257.3
Lalpur Upazila Health Complex	50	2490	3405	501	6396	10	6	0	16	17186	28951	6561	52698	1.6	57.12	0.3	17.5	144.4
Singra Upazila Health Complex	31	2192	2320	428	4940	25	11	4	40	22447	29335	9283	61065	1.75	87.12	0.8	13.5	167.3
Pabna district																		

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Atghoria Upazila Health Complex	31	1125	2064	335	3524	9	5	1	15	25852	41332	22747	89931	3	101	0.4	9.7	246.4
Bangura Upazila Health Complex	31	1287	1936	650	3873	11	8	1	20	22775	30353	7661	60789	2.5	83.72	0.5	10.6	166.5
Bera Upazila Health Complex	50	4174	4523	1402	10099	11	14	4	29	35267	36363	10753	82383	1	78	0.3	27.7	225.7
Chatmohar Upazila Health Complex	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Faridpur Upazila Health Complex	50	1657	1300	860	3817	13	10	9	32	24353	20749	12963	58065	10	64	0.8	10.5	159.1
Iswardi Upazila Health Complex	50	2928	7908	1452	12288	39	24	4	67	17056	38344	24012	79412	1.3	82	0.5	33.7	217.6
Santhia Upazila Health Complex	50	2182	4249	518	6949	15	6	2	23	23487	29965	14071	67523	2.48	81	0.3	19.0	185.0
Sujanagar Upazila Health Complex	51	2581	3140	1913	7634	3	2	0	5	12543	17682	8781	39006	2	72	0.1	20.9	106.9
Rajshahi district																		
Bagmara Upazila Health Complex	31	1498	2176	1065	4739	5	8	0	13	23420	45151	19445	88016	.34	93	0.3	13.0	241.1
Bogha Upazila Health Complex	50	1409	1931	452	3792	2	0	0	2	19281	36121	13984	69386	4.7	89	0.1	10.4	190.1
Charghat Upazila Health Complex	50	2326	4639	319	7284	3	2	0	5	35385	44492	20498	100375	1.35	87.25	0.1	20.0	275.0
Durgapur Upazila Health Complex	50	2030	3196	194	5420	4	5	0	9	5069	49494	22196	76759	1.63	37.42	0.2	14.8	210.3
Godagari Upazila Health Complex	31	1495	1749	471	3715	2	4	1	7	10940	18440	6683	36063	2.56	72.48	0.2	10.2	98.8
Mohanpur Upazila Health Complex	31	1402	1758	235	3395	3	1	0	4	21416	37525	14161	73102	2	54.16	0.1	9.3	200.3
Paba Upazila Health Complex	31	546	897	531	1974	1	0	0	1	56232	72142	43562	171936	3.4	61.6	0.1	5.4	471.1
Puthia Upazila Health Complex	50	4186	7286	2405	13877	2	11	0	13	27948	40416	33044	101408	1.59	94.52	0.1	38.0	277.8
Tanore Upazila Health Complex	50	1479	2093	894	4466	7	5	2	14	21368	42416	17991	81775	2.97	91.5	0.3	12.2	224.0
Sirajganj district																		
Belkuchi Upazila Health Complex	31	3972	5023	1028	10023	3	2	2	7	22408	31906	4833	59147	3.29	88.59	0.1	27.5	162.0
Chowhali Upazila Health Complex	31	574	602	207	1383	3	1	2	6	13667	14390	7154	35211	4	44	0.4	3.8	96.5
Kamarkanda Upazila Health Complex	31	2431	3039	288	5758	2	2	1	5	27129	33379	9804	70312	3	51	0.1	15.8	192.6
Kazipur Upazila Health Complex	31	981	1472	386	2839	11	5	1	17	18713	24210	10234	53157	3.5	87.45	0.6	7.8	145.6
Raiganj Upazila Health Complex	31	4008	3645	1490	9143	2	1	1	4	12125	12806	2455	27386	3.34	80.8	0.0	25.0	75.0
Shahzadpur Upazila Health Complex	31	1402	4362	128	5892	6	0	0	6	26621	28104	8315	63040	1	55	0.1	16.1	172.7
Tarash Upazila Health Complex	31	1178	1329	527	3034	3	5	5	13	29642	34536	14201	78379	1.5	56	0.4	8.3	214.7
Ullapara Upazila Health Complex	31	1358	1407	432	3197	3	5	1	9	20692	35214	8472	64378	2	68	0.3	8.8	176.4
Rangpur division																		
Dinajpur district																		
Birampur Upazila Health Complex	31	1865	2893	596	5354	10	3	2	15	23864	33145	10535	67544	1.89	77.93	0.3	14.7	185.1
Birganj Upazila Health Complex	31	1038	1816	748	3602	7	6	6	19	26619	35760	11622	74001	2.43	77.65	0.5	9.9	202.7
Birol Upazila Health Complex	50	1320	1105	363	2788	1	1	0	2	20192	18101	4256	42549	3.08	62.05	0.1	7.6	116.6
Bochaganj Upazila Health Complex	50	1282	1368	537	3187	4	6	1	11	12918	17794	2273	32985	2.07	43.97	0.3	8.7	90.4
Chirirbandar Upazila Health Complex	31	605	1024	190	1819	1	1	0	2	32110	30717	15780	78607	3.28	56	0.1	5.0	215.4
Fulbari Upazila Health Complex	31	2719	3398	844	6961	4	3	2	9	27317	29616	9529	66462	1.44	89.03	0.1	19.1	182.1

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Ghoraghat Upazila Health Complex	31	1066	1290	166	2522	3	2	1	6	28970	30474	6875	66319	3.58	81.72	0.2	6.9	181.7
Hakimpur Upazila Health Complex	31	1421	2312	301	4034	4	2	1	7	21460	28125	5483	55068	2.05	62.56	0.2	11.1	150.9
Kaharol Upazila Health Complex	31	1154	1420	205	2779	3	4	0	7	28505	31587	7253	67345	3.03	74.47	0.3	7.6	184.5
Khansama Upazila Health Complex	31	2111	4205	486	6802	5	5	0	10	42524	46216	15060	103800	1.84	102.46	0.1	18.6	284.4
Nawabganj Upazila Health Complex	31	1184	1794	571	3549	11	3	1	15	24579	31737	16594	72910	2.23	68.44	0.4	9.7	199.8
Parbatipur Upazila Health Complex	50	2250	2993	679	5922	7	4	0	11	23337	25453	13511	62301	2.88	82.6	0.2	16.2	170.7
Gaibandha district																		
Fulchari Upazila Health Complex	31	3961	4012	88	8061	0	0	0	0	25891	21731	1220	48842	3	69.5	0.0	22.1	133.8
Gobindaganj Upazila Health Complex	50	3782	6926	1589	12297	17	8	7	32	9955	23009	5955	38919	1.71	105	0.3	33.7	106.6
Palashbari Upazila Health Complex	31	2186	3433	704	6323	10	14	6	30	24871	34840	6666	66377	1.9	106	0.5	17.3	181.9
Sadullapur Upazila Health Complex	50	1874	2625	669	5168	3	2	4	9	25006	32920	7189	65115	4.97	94.58	0.2	14.2	178.4
Shaghatta Upazila Health Complex	31	802	1809	633	3244	4	0	2	6	34763	39238	21495	95496	2.04	58.05	0.2	8.9	261.6
Sundarganj Upazila Health Complex	31	1268	2269	377	3914	5	4	6	15	14139	20860	13495	48494	2.8	88.4	0.4	10.7	132.9
Kurigram district																		
Bhurungamari Upazila Health Complex	31	2078	2131	841	5050	5	6	0	11	31475	37713	13615	82803	2.25	82.08	0.2	13.8	226.9
Chilmari Upazila Health Complex	50	1324	1432	654	3410	3	2	1	6	13872	16975	8418	39265	2.8	97	0.2	9.3	107.6
Fulbari Upazila Health Complex	31	1376	1546	443	3365	4	1	1	6	12314	17045	6502	35861	3.87	100.61	0.2	9.2	98.2
Nageswari Upazila Health Complex	31	1406	1834	964	4204	8	5	2	15	38987	42003	18778	99768	3.42	108	0.4	11.5	273.3
Rajarhat Upazila Health Complex	50	785	1275	158	2218	2	1	0	3	23638	23577	7207	54422	4.75	89.5	0.1	6.1	149.1
Rajibpur Upazila Health Complex	31	595	792	594	1981	8	2	3	13	41582	41301	2683	85566	3.58	62.56	0.7	5.4	234.4
Rowmari Upazila Health Complex	31	1900	2219	257	4376	20	21	9	50	24420	25759	11232	61411	0.99	93.46	1.1	12.0	168.2
Ullipur Upazila Health Complex	50	2674	3689	1205	7568	5	5	3	13	23535	25025	11453	60013	2.58	91.3	0.2	20.7	164.4
Lalmonirhat district																		
Aditmari Upazila Health Complex	50	867	1150	445	2462	2	2	0	4	10145	11547	3459	25151	3	55.1	0.2	6.7	68.9
Hatibandha Upazila Health Complex	50	2441	3336	1420	7197	16	12	0	28	23434	19675	9817	52926	1.9	77.5	0.4	19.7	145.0
Kaliganj Upazilla Health Complex	50	1224	1485	478	3187	9	9	5	23	7493	7589	3635	18717	3.69	63	0.7	8.7	51.3
Patgram Upazila Health Complex	31	1068	2366	756	4190	3	4	1	8	30669	28297	8030	66996	2.54	89.58	0.2	11.5	183.6
Nilphamari district																		
Dimla Upazila Health Complex	50	3306	4070	1376	8752	0	0	0	0	10873	13490	3406	27769	2.13	70.02	0.0	24.0	76.1
Domar Upazila Health Complex	50	3066	4995	912	8973	17	21	7	45	9868	20065	7564	37497	2	72	0.5	24.6	102.7
Jaldhaka Upazila Health Complex	50	5270	9212	3390	17872	11	14	17	42	13740	16344	13296	43380	0	0.01	0.2	49.0	118.8
Kishoreganj Upazila Health Complex	31	1596	3842	957	6395	9	4	10	23	9068	10703	7883	27654	1.85	104	0.4	17.5	75.8
Saidpur Saidpur Upazila Health Complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Panchagarh district																		
Atwari Upazila Health Complex	50	2124	2442	1028	5594	1	1	0	2	14635	14488	6964	36087	2.5	75.25	0.0	15.3	98.9
Boda Upazila Health Complex	31	2182	2433	242	4857	11	9	1	21	36246	37512	10829	84587	2.75	72.87	0.4	13.3	231.7

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Debiganj Upazila Health Complex	50	1375	2938	283	4596	13	9	3	25	18175	22055	1998	42228	2.89	73	0.5	12.6	115.7
Tetulia Upazila Health Complex	50	1024	1827	570	3421	8	9	9	26	31203	33034	17942	82179	3.01	87.37	0.8	9.4	225.1
Rangpur district																		
Baderganj Upazila Health Complex	31	2670	3050	1908	7628	16	8	6	30	27510	32975	14245	74730	1.98	130.38	0.4	20.9	204.7
Gangachara Upazila Health Complex	50	1180	3748	706	5634	1	2	0	3	13359	18767	7623	39749	2.98	83.55	0.1	15.4	108.9
Kownia Upazila Health Complex	31	1513	1630	665	3808	5	5	0	10	25031	26311	22452	73794	1.3	69	0.3	10.4	202.2
Mithapukur Upazila Health Complex	50	3048	6162	898	10108	5	7	6	18	17901	26235	14238	58374	2	108	0.2	27.7	159.9
Pirgacha Upazila Health Complex	31	1297	1705	304	3306	8	1	1	10	19647	20111	11259	51017	2.92	80.02	0.3	9.1	139.8
Pirganj Upazila Health Complex	50	2913	3512	3547	9972	11	12	5	28	6208	9369	4345	19922	1.97	113.7	0.3	27.3	54.6
Taraganj Upazila Health Complex	31	1970	1132	809	3911	2	2	0	4	47248	62674	15439	125361	1	60.93	0.1	10.7	343.5
Thakurgaon district																		
Baliadangi Upazila Health Complex	50	2180	3018	890	6088	8	24	2	34	7960	10139	4800	22899	2.91	97.99	0.6	16.7	62.7
Haripur Upazila Health Complex	50	999	1773	299	3071	3	0	0	3	10041	16045	5710	31796	2.7	40.48	0.1	8.4	87.1
Pirganj Upazila Health Complex	50	2859	6231	664	9754	30	15	5	50	19265	34539	4638	58442	1.74	93.3	0.5	26.7	160.1
Ranisankhail Upazila Health Complex	50	2257	4304	641	7202	9	9	0	18	13034	23375	8198	44607	2.35	87.95	0.2	19.7	122.2
Sylhet division																		
Habiganj district																		
Azmiriganj Upazila Health Complex	31	754	1908	705	3367	8	15	16	39	29758	36054	18488	84300	2.15	54.45	1.2	9.2	231.0
Bahubal Upazila Health Complex	31	1421	2191	1734	5346	2	2	1	5	24962	26318	30023	81303	2.27	107	0.1	14.6	222.7
Baniachong Upazila Health Complex	31	1166	1687	1374	4227	10	2	1	13	24722	37440	17858	80020	2.32	81.22	0.3	11.6	219.2
Chunarughat Upazila Health Complex	31	1915	2324	712	4951	4	7	5	16	19920	21928	7512	49360	2	100	0.3	13.6	135.2
Lakhai Upazila Health Complex	31	1063	1177	287	2527	2	2	3	7	8864	17563	4265	30692	2.23	49	0.3	6.9	84.1
Madhabpur Upazila Health Complex	50	2833	3015	467	6315	5	8	3	16	26548	36135	7309	69992	1.75	64.13	0.3	17.3	191.8
Nabiganj Upazila Health Complex	31	817	2601	1275	4693	3	2	4	9	32398	44136	39685	116219	1.06	54.43	0.2	12.9	318.4
Maulvibazar district																		
Barlekha Upazila Health Complex	31	1749	3194	2320	7263	8	6	24	38	43832	47879	8130	99841	1.49	86.7	0.5	19.9	273.5
Juri Upazila Health Complex	0	0	0	0	0	0	0	0	0	10125	15010	9332	34467	0	0	0.0	0.0	94.4
Kamalganj Upazila Health Complex	31	2105	3352	988	6445	12	10	1	23	20502	24667	13348	58517	1	86.72	0.4	17.7	160.3
Kulaura Upazila Health Complex	50	4832	5441	2187	12460	1	3	6	10	48605	51697	16212	116514	1.01	70	0.1	34.1	319.2
Rajnagar Upazila Health Complex	31	1820	1925	1456	5201	2	1	1	4	29663	24904	17615	72182	2.61	85.09	0.1	14.2	197.8
Sreemangal Upazila Health Complex	50	1652	2313	2646	6611	13	8	5	26	32026	39040	6066	77132	1.87	83	0.4	18.1	211.3
Sunamganj district																		
Biswambarpur Upazila Health Complex	31	3896	3744	415	8055	11	5	8	24	34571	32378	1714	68663	2	78	0.3	22.1	188.1
Chhatak Upazila Health Complex	31	1470	2242	1443	5155	2	3	6	11	9323	16473	12850	38646	1.22	56.25	0.2	14.1	105.9
Daxin Sunamganj Upazila Health Complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Derai Upazila Health Complex	31	2804	3696	1051	7551	7	1	30	38	14078	14180	2856	31114	1.49	66.73	0.5	20.7	85.2
Dharmapasha Upazila Health Complex	31	2398	2235	1512	6145	15	17	13	45	30243	30030	7109	67382	1.74	102	0.7	16.8	184.6

Table continued

Health facility	No. of beds	No. of admissions				No. of hospital deaths				No. of outdoor visits				Average length of stay (d)	Bed-occupancy rate (%)	Hospital death rate (%)	Average daily number	
		Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total				Admission	Outdoor visit
Doarabazar Upazila Health Complex	31	377	587	524	1488	0	0	9	9	19403	23437	6886	49726	1.97	25.42	0.6	4.1	136.2
Jagannathpur Upazila Health Complex	50	1295	1585	1594	4474	3	5	17	25	13531	21691	26550	61772	2.04	48.41	0.6	12.3	169.2
Jamalganj Upazila Health Complex	31	2876	2886	0	5762	9	8	0	17	41168	52038	22648	115854	1.5	97	0.3	15.8	317.4
Sulla Upazila Health Complex	31	767	915	593	2275	8	7	8	23	9550	8326	3578	21454	2.47	49.82	1.0	6.2	58.8
Taherpur Upazila Health Complex	31	1576	1320	388	3284	12	7	5	24	24598	36709	18695	80002	2.54	71.44	0.7	9.0	219.2
Sylhet district																		
Balaganj Upazila Health Complex	31	768	1137	84	1989	1	4	1	6	18108	22410	3147	43665	2.57	38.07	0.3	5.4	119.6
Beanibazar Upazila Health Complex	50	912	4232	1849	6993	6	3	35	44	40186	47711	18980	106877	2	77.42	0.6	19.2	292.8
Biswanath Upazila Health Complex	31	161	254	81	496	0	0	0	0	10950	15225	10820	36995	3.3	14.05	0.0	1.4	101.4
Companyganj Upazila Health Complex	31	850	1287	837	2974	0	0	0	0	18806	18945	10388	48139	1.72	45.12	0.0	8.1	131.9
Fenchuganj Upazila Health Complex	31	1194	2200	441	3835	6	4	1	11	12441	16856	4037	33334	2	68	0.3	10.5	91.3
Golapganj Upazila Health Complex	31	950	2143	796	3889	2	1	3	6	21052	31198	9888	62138	2	62	0.2	10.7	170.2
Gowainghat Upazila Health Complex	50	3226	3886	2886	9998	9	11	13	33	14813	15200	13809	43822	3.25	88	0.3	27.4	120.1
Jointapur Upazila Health Complex	31	2513	3233	167	5913	2	2	1	5	22537	24491	5697	52725	1.61	93	0.1	16.2	144.5
Kanaighat Upazila Health Complex	31	1670	1694	1865	5229	3	5	9	17	17040	22166	10195	49401	1.19	54.22	0.3	14.3	135.3
South Surma Upazila Health Complex	31	0	0	0	0	0	0	0	0	3355	7406	1680	12441	0	0	0.0	0.0	34.1
Zokiganj Upazila Health Complex	31	0	0	0	0	0	0	0	0	14914	24884	7023	46821	1.46	78.38	0.0	0.0	128.3

Number of beds, admissions, deaths, outdoor visits, bed-occupancy rates, average length of stay, and hospital death rates in some private hospitals and clinics (2012)

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Central Hospital	Sadar	Barguna	30	143	1346	27	1516	0	1	0	1	1720	19261	10311	31292	4.2	85.7	0.0	0.0	0.1
The Medinova Clinic & Diagonastic Center	Amtoli	Barguna	10	24	145	5	174	0	0	0	0	0	0	0	0	0.5	0.0	17.8	3.9	0.0
Ambia Hospital Bogura Road	Sadar	Barisal	50	913	770	0	1683	4	2	0	6	81	110	39	230	4.6	0.6			0.4
Barisal Poly Clinic	Bangla Bazar	Barisal	30	201	317	0	518	1	2	0	3	0	0	0	0	1.4	0.0			0.6
Dr. Moklessur Rahaman Clinic	Sadar Road	Barisal	10	685	2125	0	2810	0	0	0	0	0	0	0	0	7.7	0.0			0.0
Dr. Khadem Hossain Clinic	Bangla Bazar	Barisal	10	92	222	0	314	0	0	0	0	120	49	35	204	0.9	0.6			0.0
Eden Nursing Home	Alekanda	Barisal	20	311	655	0	966	0	1	0	1	0	0	0	0	2.6	0.0			0.1
Fair Health Clinic	Kalibari Road	Barisal	40	515	1914	0	2429	2	0	0	2	0	0	0	0	6.7	0.0			0.1
Health Care Clinic	Parara Road	Barisal	20	744	295	0	1039	0	0	0	0	1155	980	217	2352	2.8	6.4			0.0
Islami Bank Hospital	Chandmary	Barisal	50	1979	2968	0	4947	5	4	0	9	25936	56908	8954	91798	13.6	251.5			0.2
Islamia Poly Clinic	Bangla Bazar	Barisal	10	0	90	0	90	0	0	0	0	0	0	0	0	0.2	0.0			0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Mamota Clinic	Kalebari Road	Barisal	20	339	758	0	1097	2	0	0	2	0	0	0	0	3.0	0.0			0.2
Razzak Memorial Clinic	Alakanda	Barisal	10	0	95	0	95	0	0	0	0	0	0	0	0	0.3	0.0			0.0
Seba Clinic	Band Road	Barisal	20	224	538	0	762	0	2	0	2	0	0	0	0	2.1	0.0			0.3
Popular Hospital (PVT)	Sharasti	Chandpur	10	14	615	0	629	0	1	0	1	0	0	0	0	1.7	0.0	0.0	0.0	0.2
Shohag Clinic	Rajapur	Jhalakathi	10	90%	1077	37	1114.9	0	0	0	0	0	0	0	0	3.1	0.0	0.0	0.0	0.0
Al Shefa Polly Clinic	Sadar	Jhalokathi	10	15	234	8	257	0	0	0	0	0	0	0	0	0.7	0.0	0.0	0.0	0.0
Moumita Clinic	Sadar	Jhalokathi	10	87	782	33	902	0	0	0	0	0	0	0	0	2.5	0.0	0.0	0.0	0.0
Shefa Clinic	Nalchity	Jhalokathi	10	67	284	19	370	0	0	0	0	0	0	0	0	1.0	0.0	0.0	0.0	0.0
Abdul Medical Center	Puran Bazar	Patuakhali	10	50	850	0	900	0	0	0	0	10	40	10	60	2.5	0.2			0.0
Fortune Hospital	Sadar	Patuakhali	10	20	178	5	203	0	0	0	0	0	0	0	0	0.6	0.0			0.0
Himi Poly Clinic	Sadar	Patuakhali	10	215	510	51	776	0	0	0	0	0	0	0	0	2.1	0.0			0.0
Lutharan Health Care Hospital	Dumki	Patuakhali	40	74	584	195	853	1	0	1	2	1226	7226	1787	10239	2.3	28.1	60.0	5.0	0.2
Noor General Hospital	Sadar	Patuakhali	10	4	290	0	294	0	0	0	0	10	40	0	50	0.8	0.1			0.0
Ambia Hospital	Sadar	Pirojpur	10	5	28	12	45	0	0	0	0	236	1310	622	2168	0.1	5.9	0.0	0.0	0.0
Muslim Aid Community Hospital	Sadar	Pirojpur	20	64	159	83	306	0	0	0	0	3148	7557	1890	12595	0.8	34.5	0.0	0.0	0.0
New Seba Clinic & Nursing Home	Sadar	Pirojpur	10	108	332	0	440	0	0	0	0	0	0	0	0	1.2	0.0	0.0	0.0	0.0
Pirojpur Diabetic Hospital	Sadar	Pirojpur	10	4	19	0	23	0	0	0	0	372	465	0	837	0.1	2.3	0.0	0.0	0.0
Surgicare Clinic	Sadar	Perojpur	40	440	680	70	1190	0	0	0	0	2755	3485	330	6570	3.3	18.0	0.0	0.0	0.0
Chittagong City Corporation General Hospital	Metropolitan	Chittagong	50	68	256	26	350	0	0	0	0	4121	2027	3625	9773	1.0	26.8	62.0	3.0	0.0
Chittagong Ekushey Hospital (PVT) Ltd	Metropolitan	Chittagong		844	728	256	1828	8	7	0	15	630	532	159	1321	5.0	3.6			0.8
Chittagong Niramoy Clinic (PVT) Ltd. 75 panclaish R/A	Metropolitan	Chittagong	25	687	613	282	1582	12	8	0	20	571	463	89	1123	4.3	3.1			1.3
Lions Charitable Eye Hospital	Zakir Hossain Road	Chittagong	100	858	912	35	1805	0	0	0	0	23225	20972	9702	53899	4.9	147.7			0.0
Memon Maternity Hospital	Metropolitan	Chittagong	50	0	3978	487	4465	0	0	22	22	0	17511	7308	24819	12.2	68.0	0.0	3.0	0.5
Modern Hospital	Sitakunda	Chittagong	20	194	636	454	1284	4	0	0	4	769	1720	961	3450	3.5	9.5	0.0	0.0	0.3
Niramoy Clinic Pvt. Ltd	Panchlaish	Chittagong		687	613	282	1582	12	8	0	20	571	463	89	1123	4.3	3.1	0.0	0.0	1.3
Sitakunda General Hospital	Sitakunda	Chittagong	20	160	452	480	1092	3	0	0	3	371	673	507	1551	3.0	4.2	60.0	3.0	0.3
Southern Medical College and Hospital	Sitakunda	Chittagong	250	722	1076	523	2321	8	10	6	24	5208	5804	1581	12593	6.4	34.5	33.0	4.0	1.0
Appollo Diagnostic & Hospital	Barura	Comilla	10	517	932	221	1670	1	-	-	1	5923	9995	555	16473	4.6	45.1	-	-	0.1
Chandina Central Hospital	Sadar	Comilla	10	34	246	4	284	0	0	0	0	478	892	61	1431	0.8	3.9	0.0	0.0	0.0
Chandina Medical Centre	Sadar	Comilla	10	228	518	26	772	0	0	1	1	2897	4165	1074	8136	2.1	22.3	0.0	0.0	0.1
Doctors Community Hospital	Barura	Comilla	14	381	667	209	1257	3	1	-	4	2653	3373	2705	8731	3.4	23.9	-	-	0.3
Fair Hospital	Barura	Comilla	10	432	864	144	1440	-	-	2	2	3600	5400	4300	13300	3.9	36.4	4.0	3.0	0.1
Isdo Hospital & Diagnostic Center	Barura	Comilla	20	200	280	125	605	2	1	0	3	3500	5450	1220	10170	1.7	27.9	-	-	0.5
Jononi Medical Centre	Chandina	Comilla	10	150	375	56	581	0	0	0	0	146	430	114	690	1.6	1.9	0.0	0.0	0.0
Medicare Hospital	Barura	Comilla	10	40	200	60	300	1	-	-	1	1500	3400	1100	6000	0.8	16.4	-	-	0.3
Mission Hospital	Brahmanpara	Comilla	10	230	840	90	1160	0	0	0	0	1080	2160	360	3600	3.2	9.9	0.0	0.0	0.0
Mohona Medical Centre	Chandina	Comilla	10	187	319	106	612	0	0	0	0	791	839	612	2242	1.7	6.1	0.0	0.0	0.0
Cox's Bazar Fouad Al Khateeb Hospital	Sadar	Cox's Bazar	80	3039	3525	2595	9159	26	34	75	135	2499	2691	1222	6412	25.1	17.6	0.7	2.3	1.5
Cox's Bazar Baitus Sharaf Hospital	Sadar	Cox's Bazar	50	2035	1104	0	3139	0	0	0	0	20625	14952	1923	37500	8.6	102.7	0.6	1.5	0.0
Central Hospital	Sadar	Cox's Bazar	12	1176	947	166	2289	4	5	3	12	2796	2052	185	5033	6.3	13.8	0.0	0.0	0.5
Chakaria Zam Zam Hospital	Sadar	Cox's Bazar	30	1731	3462	577	5770	1	2	6	9	5810	11322	3086	20218	15.8	55.4	1.6	3.7	0.2

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Ma-o- Shishu Hospital	Sadar	Cox's Bazar	10	126	790	908	1824	0	0	3	3	380	1283	567	2230	5.0	6.1	0.0	0.0	0.2
Memorial Christan Hospital	Sadar	Cox's Bazar	65	1357	2356	0	3713	18	16	19	53	10353	13809	3325	27487	10.2	75.3	0.0	0.0	1.4
NGO Hospital	Teknaf	Cox's Bazar	0	0	0	0	0	0	0	0	0	4832	6884	11530	23246	0.0	63.7	0.0	0.0	0.0
St. Marten	Teknaf	Cox's Bazar	0	0	0	0	0	0	0	0	0	1113	1947	429	3489	0.0	9.6	0.0	0.0	0.0
Dhaka National Medical Institute Hospital	Metropolitan	Dhaka	600	6672	9887	0	16559	38	30	0	68	0	0	0	0	45.4	0.0	0.0	0.0	0.4
AL-Amin General Hospital	Sadar	Feni	10	210	185	395	790	0	0	0	0	320	415	410	1145	2.2	3.1	0.0	0.0	0.0
Al-Insaniat Hospital & Diagonstic Center	Chagalniya	Feni	10	143	429	307	879	0	0	0	0	253	581	770	1604	2.4	4.4	0.0	4.0	0.0
AL-Kemy (PVT) Hospital	Sadar	Feni	30	1580	2080	3660	7320	14	0	0	14	800	875	500	2175	20.1	6.0	0.0	0.0	0.2
Cosmopoliton (PVT) Hospital	Sadar	Feni	20	300	510	810	1620	13	0	0	13	650	690	500	1840	4.4	5.0	0.0	0.0	0.8
Dr. Haidar Clinic & Hospital	Sadar	Feni	10	300	395	695	1390	0	0	0	0	350	430	780	1560	3.8	4.3	0.0	0.0	0.0
Ebnee Hasman (PVT) Hospital	Sadar	Feni	10	510	860	1370	2740	0	0	0	0	280	315	520	1115	7.5	3.1	0.0	0.0	0.0
Feni Central (PVT) Hospital	Sadar	Feni	20	950	1065	2015	4030	0	0	0	0	1225	1620	850	3695	11.0	10.1	0.0	0.0	0.0
Feni Diabetic Hospital	Sadar	Feni	25	2500	4375	6900	13775	95	0	0	95	32800	48280	10500	91580	37.7	250.9	0.0	0.0	0.7
Manarat Hospital	Chagalniya	Feni	10	133	384	479	996	0	0	0	0	286	408	1126	1820	2.7	5.0	0.0	4.0	0.0
Mediscan (PVT) Hospital	Sadar	Feni	20	410	560	970	1940	8	0	0	8	2416	3650	460	6526	5.3	17.9	0.0	0.0	0.4
Shahin Clinic (PVT) Hospital	Sadar	Feni	10	210	260	470	940	0	0	0	0	360	880	1240	2480	2.6	6.8	0.0	0.0	0.0
Upasham General Hospital	Sadar	Feni	20	2685	2224	4909	9818	17	0	0	17	220	180	160	560	26.9	1.5	0.0	0.0	0.2
Adhunic Hospital	Sadar	Lakshmipur	50	3115	7225	1340	11680	0	0	0	0	1888	1655	1015	4558	32.0	12.5	196.0	3.0	0.0
Amani	Sadar	Lakshmipur					0				0	2732	3340	3130	9202	0.0	25.2			0.0
Bai-Bai Hospital	Sadar	Lakshmipur	20	1255	2657	468	4380	0	0	0	0	825	921	495	2241	12.0	6.1	183.0	3.0	0.0
Bhabaniganj	Sadar	Lakshmipur					0				0	3478	4236	4784	12498	0.0	34.2			0.0
Bijoynagar	Sadar	Lakshmipur					0				0	2682	3382	2720	8784	0.0	24.1			0.0
Central Hospital	Sadar	Lakshmipur	10	795	1588	415	2798	0	0	0	0	1588	1678	925	4191	7.7	11.5	255.0	3.3	0.0
City Hospital	Sadar	Lakshmipur	10	815	1688	401	2904	0	0	0	0	1088	1255	798	3141	8.0	8.6	229.0	2.9	0.0
Dattapara	Sadar	Lakshmipur					0				0	2265	3053	1472	6790	0.0	18.6			0.0
Hazirpara	Sadar	Lakshmipur					0				0	4144	5483	3211	12838	0.0	35.2			0.0
Manarat Hospital	Sadar	Lakshmipur	10	815	1316	455	2586	0	0	0	0	988	1025	795	2808	7.1	7.7	236.0	3.3	0.0
Matricya Hospital (PVT)	Sadar	Lakshmipur	10	385	480	128	993	3	0	2	5	4410	7281	7131	18822	2.7	51.6	1.0	3.5	0.5
Meghna Hospital (PVT)	Sadar	Lakshmipur	10	29	141	18	188	0	0	0	0	110	290	30	430	0.5	1.2	0.7	3.5	0.0
Meharunnessa Hospital (PVT)	Sadar	Lakshmipur	10	52	164	36	252	0	0	0	0	1220	1980	100	3300	0.7	9.0	0.2	3.4	0.0
Melonium Hospital	Sadar	Lakshmipur	30	2388	4888	1849	9125	0	0	0	0	788	985	556	2329	25.0	6.4	84.0	3.0	0.0
Model Hospital	Sadar	Lakshmipur	10	855	1678	387	2920	0	0	0	0	1896	2254	1977	6127	8.0	16.8	260.0	3.3	0.0
Modern Hospital (PVT)	Sadar	Lakshmipur	10	162	549	53	764	0	0	0	0	263	987	210	1460	2.1	4.0	0.7	3.5	0.0
Motherland Hospital	Sadar	Lakshmipur	10	915	1865	499	3279	0	0	0	0	788	815	526	2129	9.0	5.8	311.0	3.4	0.0
New Adhunic Hospital	Sadar	Lakshmipur	10	715	1188	398	2301	0	0	0	0	1125	1422	755	3302	6.3	9.0	200.0	3.2	0.0
Rasulganj	Sadar	Lakshmipur					0				0	4147	4864	5508	14519	0.0	39.8			0.0
Rupachara	Sadar	Lakshmipur					0				0	2934	4782	4166	11882	0.0	32.6			0.0
Seba Hospital (PVT)	Sadar	Lakshmipur	10	65	397	77	539	0	0	0	0	1151	925	444	2520	1.5	6.9	0.5	3.5	0.0
Suprim Care Hospital	Sadar	Lakshmipur	10	795	1788	488	3071	0	0	0	0	1522	1877	915	4314	8.4	11.8	229.0	2.7	0.0
Uposom Hospital	Sadar	Lakshmipur	10	765	1298	395	2458	0	0	0	0	988	1122	815	2925	6.7	8.0	221.0	3.3	0.0
Christian Hospital	Chandraghona, Kaptai	Rangamati	100	1525	3476	930	5931	21	19	4	44	6614	21346	4908	32868	16.2	90.0	68.5	5.0	0.7

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Lake site hospital	Sadar	Rangamati	15	13	447	0	460	0	0	9	9	0	10	0	10	1.3	0.0	0.0		2.0
Marie Stopes	Sadar	Rangamati	0	0	0	0	0	0	0	0	0	61	1667	127	1855	0.0	5.1	0.0	0.0	0.0
Rabita Hospital	Mainimukh, Langadu	Rangamati	35	366	546	168	1080	6	3	5	14	3130	2330	999	6459	3.0	17.7	3.0	3.0	1.3
RHSTEP	Sadar	Rangamati	0	0	0	0	0	0	0	0	0	17	4369	11	4397	0.0	12.0	0.0	0.0	0.0
Surjer Hasi Clinic	Sadar	Rangamati	0	0	0	0	0	0	0	0	0	10245	26507	15173	51925	0.0	142.3	0.0	0.0	0.0
Ad-din Womens Medical College Hospital	Moghbazar	Dhaka	500	1071	18849	4719	24639	2	6	30	38	27382	168884	164207	360473	67.5	987.6	60.9	4.8	0.2
Ahsania Mission Cancer and General Hospital	Metropolitan	Dhaka	40	937	812	76	1825	16	19	0	35	1417	2619	121	4157	5.0	11.4	19.0	5.0	1.9
Aysha Memorial Specialized Pvt. Hospital	Mohakhali	Dhaka	120	1976	1948	1454	5378	82	59	121	262	16756	16091	8729	41576	14.7	113.9	57.0	5.0	4.9
Bashundhara Ad-din Haspital	Hasnabad, Keraniganj	Dhaka	500	2214	2647	0	4861	1	2	0	3	10854	18733	6214	35801	13.3	98.1	13.8	5.2	0.1
BIHS General Hospital & Urban Health Care Centre	Darus Salam, Mirpur	Dhaka	97	1306	1948	181	3435	8	8	1	17	239067	333012	1671	573750	9.4	1571.9	38.6	5.0	0.5
Hasnabad Hospital	Keraniganj	Dhaka	20	587	782	0	1369	0	0	0	0	720	918	448	2086	3.8	5.7	74.9	4.0	0.0
IBN Sina Medical College Hospital	Kallanpur	Dhaka	250	1578	1595	187	3360	15	7	1	23	21411	20630	7248	49289	9.2	135.0	58.0	3.0	0.7
Kalatia Central Hospital	Keraniganj	Dhaka	20	688	690	0	1378	0	0	0	0	2687	5477	1873	10037	3.8	27.5	84.7	4.5	0.0
Khalamura General Hospital	Keranjganj	Dhaka	10	234	374	0	608	0	0	0	0	1244	2101	978	4323	1.7	11.8	68.3	4.1	0.0
Marie Stopes Centers	Metropolitan	Dhaka	45	0	2587	0	2587	0	0	0	0	951741	163832	11324	1270330	7.1	3480.4	1.0	2.5	0.0
National Heart Foundation Hospital & Research Institute	Mirpur	Dhaka	311	11356	4488	528	16372	279	121	18	418	28582	17972	1090	47644	44.9	130.5	73.0	5.1	2.6
Rafia Clinic	Ati bazar, Keraniganj	Dhaka	10	315	359	0	674	0	0	0	0	7841	1165	879	9885	1.8	27.1	75.5	4.1	0.0
Ruhitpur Gertneral Hospital	Keranjganj	Dhaka	20	523	621	0	1144	0	0	0	0	1123	1248	987	3358	3.1	9.2	64.5	4.1	0.0
Sajeda Hospital	Jinjira, Keraniganj	Dhaka	50	1274	1389	0	2663	2	1	0	3	7216	9147	5436	21799	7.3	59.7	82.0	5.6	0.1
Biswa Zaker Manjil Hospital	Aatrashi, Sadarpur	Faridpur	10	562	1308	61	1931	3	4	6	13	6318	9921	1032	17271	5.3	47.3	158.7	3.0	0.7
A.K. Memorial Hospital Ltd.	Mowna, Sreepur	Gazipur	20	55	289	21	365	0	0	0	0	605	1370	215	2190	1.0	6.0	15.4	3.1	0.0
Al-Hera Medical Centre	Sreepur	Gazipur	10	560	846	975	2381	0	0	0	0	688	974	1143	2805	6.5	7.7	163.8	2.5	0.0
Amraid General Hospital	Kapaia	Gazipur	10	100	323	87	510	2	0	1	3	770	896	111	1777	1.4	4.9	28.0	2.4	0.6
Apex Hospital	Chowrasta, Sadar	Gazipur	10	18	54	0	72	0	0	0	0	339	785	47	1171	0.2	3.2	11.8	3.0	0.0
Begum Aysa Hospital & Dioagnostic Center	Sreepur	Gazipur	10	152	494	89	735	0	0	0	0	320	1390	105	1815	2.0	5.0	41.0	2.0	0.0
Dewan General Hospital	Kaliakoir	Gazipur	10	380	1090	365	1835	0	0	0	0	395	1397	398	2190	5.0	6.0	50.3	2.1	0.0
Doctors Hospital Chowrasta	Sadar	Gazipur	10	35	145	0	180	0	0	0	0	215	745	135	1095	0.5	3.0	15.6	3.2	0.0
Gazipur Clinic & Diagnostic Lab	Sadar	Gazipur	10	132	486	54	672	1	0	0	1	3030	5220	4750	13000	1.8	35.6	54.9	3.0	0.1
Ideal Diagnostic Hospital	Amraid, Kapasia	Gazipur	10	56	286	38	380	0	0	0	0	215	478	42	735	1.0	2.0	21.6	2.1	0.0
Insaf Hospital & Diagnostic Centre	Sadar	Gazipur	20	292	663	2	957	0	0	0	0	871	873	0	1744	2.6	4.8	40.7	3.1	0.0
Jamil Eye & General Hospital	Kaliganj	Gazipur	20	136	375	33	544	0	0	0	0	11695	6683	4507	22885	1.5	62.7	26.5	3.6	0.0
Jana Sheba Hospital	Kaliakoir	Gazipur	9	415	1415	135	1965	0	0	0	0	515	465	115	1095	5.4	3.0	59.8	2.0	0.0
Kaliganj Central Hospital	Kaliganj	Gazipur	10	70	520	85	675	0	0	0	0	730	2560	1090	4380	1.8	12.0	55.3	3.0	0.0
Khwaja Badrudduja Modern Hospital	Kaliakoir	Gazipur	10	227	714	38	979	0	0	0	0	570	718	318	1606	2.7	4.4	59.3	2.2	0.0
Konabari Clinic & Diagnostic Centre	Sadar	Gazipur	10	365	1040	30	1435	0	0	0	0	1025	1815	835	3675	3.9	10.1	118.2	3.0	0.0
Medipath Hospital & Diagnostic Center	Sadar	Gazipur	20	289	1131	28	1448	0	0	0	0	2544	2610	321	5475	4.0	15.0	82.2	4.1	0.0
Nova General Hospital	Mowna, Sreepur	Gazipur	10	315	728	52	1095	2	5	0	7	195	455	85	735	3.0	2.0	30.0	2.0	0.6
Rabeya Shakhina Clinic & DiagnosticCentre	Kaliakoir	Gazipur	23	60	107	21	188	0	0	0	0	312	446	414	1172	0.5	3.2	7.5	3.3	0.0
Shitalakhya General Hospital	Kapaia	Gazipur	20	283	996	123	1402	0	1	0	1	4075	6275	1455	11805	3.8	32.3	57.9	3.0	0.1
Shuvecha Clinic	Kaliakoir	Gazipur	10	170	301	75	546	0	0	0	0	1102	2108	470	3680	1.5	10.1	15.0	3.0	0.0
Siraj General Hospital & Diagnostic Centre	Sadar	Gazipur	10	112	318	56	486	0	0	0	0	1075	1922	645	3642	1.3	10.0	30.0	2.2	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
St.Marys Catholic Mother & Child Care Centre	Kaliganj	Gazipur	10	0	386	0	386	0	0	0	0	1124	7668	6696	15488	1.1	42.4	32.2	3.0	0.0
Sultan General Hospital	Board Bazar, Sadar	Gazipur	10	588	1602	0	2190	0	0	0	0	520	2521	174	3215	6.0	8.8	120.4	2.0	0.0
Upasam Hospital & Diagnostic Center	Sadar	Gazipur	10	52	250	0	302	0	0	0	0	29	105	20	154	0.8	0.4	28.6	3.5	0.0
Holy Home Hospital & Diagnostic Center	Kapasia	Gazipur	10	65	281	35	381	0	0	0	0	1418	1979	914	4311	1.0	11.8	21.4	2.1	0.0
City Lab Health Care Hospital	Sadar	Kishoreganj	10	145	721	18	884	0	0	0	0	5882	6373	569	12824	2.4	35.1	82.0	3.4	0.0
Diabetics Hospital	Sadar	Kishoreganj	10	10	320	0	330	0	0	0	0	1434	1410	0	2844	0.9	7.8	27.0	3.0	0.0
Erina Nursing Home	Sadar	Kishoreganj	10	34	403	403	840	0	0	0	0	0	0	0	0	2.3	0.0	59.0	3.0	0.0
Isa Khan Nursing Home	Sadar	Kishoreganj	10	134	1667	0	1801	0	0	0	0	615	870	280	1765	4.9	4.8	148.0	3.0	0.0
Jahurul Islam Medical College and Hospital	Bajitpur	Kishoreganj	390	8124	7498	5778	21400	301	278	201	780	130964	120897	27668	279529	58.6	765.8	56.0	3.8	3.6
Khidmah Hospital	Sadar	Kishoreganj	20	405	632	0	1037	0	0	0	0	1546	2788	0	4334	2.8	11.9	43.0	3.0	0.0
Kishoreganj Clinic	Sadar	Kishoreganj	20	800	1325	82	2207	0	0	0	0	10	12	5	27	6.0	0.1	91.0	3.0	0.0
Medi Lab Health Center	Sadar	Kishoreganj	10	255	620	205	1080	1	1	0	2	420	1070	330	1820	3.0	5.0	119.0	4.0	0.2
Saed Yousuf Memorial Hospital	Sadar	Kishoreganj	30	348	209	2	559	22	14	0	36	730	410	10	1150	1.5	3.2	20.0	4.0	6.4
Charmugaria Adhunik Hospital	Sadar	Madaripur	20	290	350	0	640	0	0	0	0	2600	3587	370	6557	1.8	18.0			0.0
Chowdhury Clinic	Sadar	Madaripur	20	0	2072	28	2100	0	0	0	0	6000	12000	12000	30000	5.8	82.2	29.0	58.0	0.0
Dhaka progresive Lions Eye Hospital	Tekerhat, Rajoir	Madaripur	10	261	375	0	636	0	0	0	0	5661	6493	1717	13871	1.7	38.0	52.0	3.0	0.0
Medinova Clinic	Shibchar	Madaripur	10	40	210	56	306	0	0	0	0	0	0	0	0	0.8	0.0	26.0	3.0	0.0
Medipath Clinic	Shibchar	Madaripur	8	12	537	0	549	0	0	0	0	0	0	0	0	1.5	0.0	47.0	2.5	0.0
Mukta Clinic	Shibchar	Madaripur	10	93	152	42	287	0	0	0	0	0	0	0	0	0.8	0.0	23.0	3.0	0.0
Niramoy Hospital	Sadar	Madaripur	64	2073	3316	2901	8290	8	12	15	35	3320	9865	7425	20610	22.7	56.5	35.0	22.0	0.4
Noor Clinic	Kalkini	Madaripur	10	28	452	0	480	0	0	0	0	0	0	0	0	1.3	0.0	13.0	3.0	0.0
Panchar Royal Clinic	Shibchar	Madaripur	10	100	150	20	270	0	0	0	0	0	0	0	0	0.7	0.0	22.0	3.0	0.0
Popular Clinic	Shibchar	Madaripur	8	15	240	24	279	0	0	0	0	0	0	0	0	0.8	0.0	29.0	3.0	0.0
Setara General Hospital	Sadar	Madaripur	8	50	111	14	175	0	0	0	0	0	0	0	0	0.5	0.0	6.0	48.0	0.0
Surjer Hasi clinic/NGO	Rajoir	Madaripur	0	0	0	0	0	0	0	0	0	1711	6676	1210	9597	0.0	26.3	0.0	0.0	0.0
Tekerhat Central Clinic	Rajoir	Madaripur	7	6	119	0	125	0	0	0	0	0	0	0	0	0.3	0.0	27.0	5.0	0.0
Tekerhat General Hospital	Tekerhat, Rajoir	Madaripur	10	128	475	54	657	0	0	0	0	2150	2890	2980	8020	1.8	22.0	81.0	4.0	0.0
Ummahany (pvt)Hospital	Rajoir	Madaripur	7	31	183	0	214	0	0	0	0	0	0	0	0	0.6	0.0	34.0	4.0	0.0
United Diagnostic Centre& Hospital	Rajoir	Madaripur	8	0	38	0	38	0	0	0	0	10	5	4	19	0.1	0.1	16.0	4.0	0.0
US Model Hospital	Rajoir	Madaripur	10	120	540	60	720	0	0	0	0	3600	7200	3600	14400	2.0	39.5	99.0	5.0	0.0
AR-Clinic	Sadar	Munshiganj	20	169	530	39	738	0	0	0	0	12244	19582	7422	39248	2.0	107.5	112.7	4.9	0.0
Baligaon Clinic	Baligaon, Tangibari	Munshiganj	10	214	354	50	618	0	0	0	0	195	314	192	701	1.7	1.9	136.1	6.1	0.0
Doctors Clinic	Sadar	Munshiganj	15	100	230	25	355	1	0	0	1	3214	2415	2354	7983	1.0	21.9	105.8	3.5	0.3
Modern Clinic	Sadar	Munshiganj	20	321	365	37	723	2	1	0	3	1965	4521	1324	7810	2.0	21.4	106.6	7.6	0.4
Mollah Clinic & Diagonastic	Sadar	Munshiganj	20	214	698	29	941	2	1	1	4	2356	5698	1562	9616	2.6	26.3	117.4	7.8	0.4
Munshiganj Adunik hospital	Sadar	Munshiganj	20	322	459	40	821	2	1	0	3	3694	5421	1254	10369	2.2	28.4	100.1	7.8	0.4
Tangibari Clinic	Tangibari	Munshiganj	20	235	568	45	848	0	0	0	0	345	489	311	1145	2.3	3.1	109.2	6.5	0.0
United Clinic	Tangibari	Munshiganj	35	224	789	30	1043	0	0	0	0	475	724	425	1624	2.9	4.4	71.1	6.8	0.0
Central Clinic	Sadar	Narayanganj	20	382	1497	293	2172	0	0	0	0	0	0	0	0	6.0	0.0	90.0	3.0	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Medister Hospital	Sadar	Narayanganj	40	724	2575	371	3670	0	0	0	0	0	0	0	0	10.1	0.0	87.9	3.0	0.0
Mukti Hospital	Sadar	Narayanganj	20	226	1328	188	1742	0	0	0	0	0	0	0	0	4.8	0.0	67.7	3.0	0.0
Poly Clinic	Sadar	Narayanganj	20	178	1501	191	1870	0	0	0	0	0	0	0	0	5.1	0.0	96.1	3.0	0.0
Razia Clinic	Sadar	Narayanganj	20	77	1447	127	1651	0	0	0	0	0	0	0	0	4.5	0.0	87.2	3.0	0.0
Al Sabha Hospital	Raipura	Narsingdi	10	25	109	7	141	0	0	0	0	1000	1400	520	2920	0.4	8.0	15.5	4.0	0.0
Al-Fala Peoples (Pvt) Hospital	C&B Road	Narsingdi	10	77	407	35	519	0	0	0	0	1415	1856	360	3631	1.4	9.9	56.9	4.0	0.0
Baburhat Genaral Hospital	Sadar	Narsingdi	10	3	356	0	359	0	0	0	0	24	473	46	543	1.0	1.5	39.3	4.0	0.0
British Bangla Hospital	Sadar	Narsingdi	10	45	330	10	385	0	0	0	0	600	1300	70	1970	1.1	5.4	42.2	4.0	0.0
Efa Private Hospital	C&B Road	Narsingdi	10	60	375	375	810	0	0	0	0	192	371	88	651	2.2	1.8	144.3	6.5	0.0
Faith General Hospital	Madhabdi	Narsingdi	10	201	497	26	724	0	0	0	0	5157	4263	2103	11523	2.0	31.6	37.4	1.9	0.0
Hazarat Shajalal (R) Genaral Hospital	Bashial	Narsingdi	20	116	561	17	694	0	0	0	0	410	680	350	1440	1.9	3.9	28.5	3.0	0.0
Holy Cricent (Pvt) Hospital	Madhabdi	Narsingdi	10	180	215	70	465	0	0	0	0	210	270	90	570	1.3	1.6	38.2	3.0	0.0
Holy Life Genaral Hospital	Tarua	Narsingdi	10	86	502	60	648	0	0	0	0	1103	1520	233	2856	1.8	7.8	71.0	4.0	0.0
Jam Jam Hospital	Tarua	Narsingdi	10	85	499	0	584	0	0	0	0	800	2700	300	3800	1.6	10.4	64.0	4.0	0.0
Lab Care Genaral Hospital	Madhabdi	Narsingdi	10	73	383	11	467	0	0	0	0	1250	2260	330	3840	1.3	10.5	51.2	4.0	0.0
Mita Nursing Home	Sadar Road	Narsingdi	10	133	345	22	500	0	0	0	0	2860	3620	75	6555	1.4	18.0	41.6	3.4	0.0
Mukti General Hospital	Bashial	Narsingdi	10	200	400	50	650	0	0	0	0	1825	2050	400	4275	1.8	11.7	89.0	5.0	0.0
Narsingdi Genaral Hospital	Tarua	Narsingdi	10	189	842	68	1099	0	0	0	0	415	799	105	1319	3.0	3.6	90.3	3.0	0.0
Narsingdi Mordern Clinic	Chinishpur	Narsingdi	10	120	288	8	416	0	0	0	0	2400	2016	72	4488	1.1	12.3	55.8	5.0	0.0
National Genaral Hospital	Bashial	Narsingdi	10	1020	845	69	1934	0	0	0	0	1580	2020	600	4200	5.3	11.5	159.0	3.0	0.0
New Sufia (Pvt) Hospital	South Satirpara	Narsingdi	7	180	315	25	520	0	0	0	0	1510	1200	202	2912	1.4	8.0	66.6	3.3	0.0
Niramoy Hospital	C&B Road	Narsingdi	10	150	350	50	550	0	0	0	0	315	390	120	825	1.5	2.3	60.3	4.0	0.0
Nurjahan General Hospital	C&B Road	Narsingdi	10	319	616	120	1055	0	2	0	2	2843	3623	1153	7619	2.9	20.9	93.9	3.3	0.2
Prime Genaral Hospital	Tarua	Narsingdi	30	135	997	50	1182	0	0	1	1	2350	3370	550	6270	3.2	17.2	31.8	3.0	0.1
Prime Genaral Hospital	Madhabdi	Narsingdi	10	227	1089	65	1381	0	0	2	2	1865	2735	355	4955	3.8	13.6	111.2	3.0	0.1
Rowshon General Hospital	Palash	Narsingdi	10	72	336	24	432	0	0	0	0	753	726	346	1825	1.2	5.0	31.0	2.6	0.0
Shahin General hospital	Raipura	Narsingdi	10	40	400	40	480	0	0	0	0	730	2920	1825	5475	1.3	15.0	52.6	4.0	0.0
Shibpur General Hospital	Sadar	Narsingdi	10	220	817	2	1039	0	0	0	0	271	1474	16	1761	2.8	4.8	123.5	4.3	0.0
Supreme Genaral Hospital	Bhelanagar	Narsingdi	10	80	386	0	466	0	0	0	0	353	902	65	1320	1.3	3.6	38.3	3.0	0.0
Taj (Pvt) Hospital	Monohardi	Narsingdi	10	27	774	5	806	0	1	0	1	1120	2592	497	4209	2.2	11.5	90.0	4.1	0.1
Taramia General Hospital	Palash	Narsingdi	10	36	540	24	600	0	0	0	0	1920	3000	1224	6144	1.6	16.8	65.8	4.0	0.0
Dabir Uddin Memorial Hospital	Sadar	Bagerhat	10	60	228	0	288	0	0	0	0	921	2152	455	3528	0.8	9.7	96.0	6.0	0.0
Damurhuda Private Hospital	Damurhuda	Chuadanga	10	109	470	0	579	0	0	0	0	0	0	0	0	1.6	0.0	0.0	0.0	0.0
Ma o Shishu Hospital	Damurhuda	Chuadanga	10	182	830	0	1012	0	0	0	0	92	293	147	532	2.8	1.5	0.0	0.0	0.0
Modern Clinic	Damurhuda	Chuadanga	10	167	824	0	991	0	0	0	0	0	0	0	0	2.7	0.0	0.0	0.0	0.0
Mukti Clinic	Damurhuda	Chuadanga	10	120	379	0	499	0	0	0	0	0	0	0	0	1.4	0.0	0.0	0.0	0.0
New Digital Clinic	Damurhuda	Chuadanga	10	162	397	0	559	0	0	0	0	0	0	0	0	1.5	0.0	0.0	0.0	0.0
Niramoy Clinic	Damurhuda	Chuadanga	10	130	502	0	632	0	0	0	0	0	0	0	0	1.7	0.0	0.0	0.0	0.0
Shapla Clinic	Damurhuda	Chuadanga	10	169	810	0	979	0	0	0	0	0	0	0	0	2.7	0.0	0.0	0.0	0.0
Sheba Clinic	Damurhuda	Chuadanga	10	133	410	0	543	0	0	0	0	0	0	0	0	1.5	0.0	0.0	0.0	0.0
Abdus Sattar Memorial Hospital	Moheshpur	Jhenaidha	10	13	35	0	48	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0
Akota Pvt. Hospital	Kotchandpur	Jhenaidha	10	34	60	0	94	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
All Razi Pvt. Hospital	Kotchandpur	Jhenaidah	10	20	78	0	98	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0
All Shafa Pvt. Hospital	Kotchandpur	Jhenaidah	10	21	59	0	80	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Anwara Pvt. Hospital	Harinakundu	Jhenaidah	10	33	363	0	396	0	0	0	0	0	0	0	0	1.1	0.0	65.0	6.0	0.0
Aysha (Pvt) Clinic	Shailakupa	Jhenaidah	10	24	166	0	190	0	0	0	0	0	0	0	0	0.5	0.0	0.0	0.0	0.0
Bhai Bhai Pvt. Hospital	Harinakundu	Jhenaidah	10	0	180	0	180	0	0	0	0	0	0	0	0	0.5	0.0	35.0	7.0	0.0
Darus Shefa Clinic	Kaliganj	Jhenaidah	10	40	814	0	854	0	0	0	0	0	0	0	0	2.3	0.0	0.5	2.1	0.0
Doctors Clinic	Sadar	Jhenaidah	10	10	169	0	179	0	0	0	0	0	0	0	0	0.5	0.0	0.0	0.0	0.0
Doctors PVT. Hospital	Kaliganj	Jhenaidah	10	270	512	53	835	0	0	0	0	0	0	0	0	2.3	0.0	0.5	2.0	0.0
Fatima Hospital	Kaliganj	Jhenaidah	10	128	362	15	505	0	0	0	0	0	0	0	0	1.4	0.0	0.2	2.2	0.0
General Hospital	Kaliganj	Jhenaidah	10	68	248	23	339	0	0	0	0	0	0	0	0	0.9	0.0	0.2	2.3	0.0
Grameen Clinic	Moheshpur	Jhenaidah	10	10	60	0	70	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Hasna Clinic	Kaliganj	Jhenaidah	10	31	269	22	322	0	0	0	0	0	0	0	0	0.9	0.0	0.3	3.0	0.0
Islami Hospital	Kaliganj	Jhenaidah	10	73	427	213	713	0	0	0	0	0	0	0	0	2.0	0.0	0.4	2.1	0.0
Islamic Pvt. Hospital	Moheshpur	Jhenaidah	10	11	38	0	49	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0
Janata Clinic & Nursing Home	Kotchandpur	Jhenaidah	10	34	51	0	85	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Janoni Clinic	Moheshpur	Jhenaidah	10	25	68	0	93	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0
Jononi Clinic	Kaliganj	Jhenaidah	10	37	24	24	85	0	0	0	0	0	0	0	0	0.2	0.0	0.1	2.0	0.0
Khandokar (Pvt)Clinic	Shailakupa	Jhenaidah	10	60	360	0	420	0	0	0	0	0	0	0	0	1.2	0.0	0.0	0.0	0.0
Kotchandpur Nursing Home	Sadar	Jhenaidah	10	115	151	0	266	0	0	0	0	0	0	0	0	0.7	0.0	0.0	0.0	0.0
Maa & Shishu Clinic	Moheshpur	Jhenaidah	10	21	59	0	80	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Mahabuba Pvt. Hospital	Kotchandpur	Jhenaidah	10	30	54	0	84	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Modern Surgical Clinic	Kaliganj	Jhenaidah	10	46	297	50	393	0	0	0	0	0	0	0	0	1.1	0.0	0.2	2.0	0.0
Moheshpur Pvt. Hospital	Moheshpur	Jhenaidah	10	20	78	0	98	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0
Mohila oh Ma Sishu Clinic	Shailakupa	Jhenaidah	10	22	112	34	168	0	0	0	0	0	0	0	0	0.5	0.0	0.0	0.0	0.0
Mohiuddin Pvt.Hospital	Moheshpur	Jhenaidah	10	9	42	0	51	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0
Moshiar Rahman Memorial Hospital	Moheshpur	Jhenaidah	10	12	44	0	56	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Mukti Clinic	Moheshpur	Jhenaidah	10	24	60	0	84	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Najma Clinic	Kaliganj	Jhenaidah	10	46	306	0	352	0	0	0	0	0	0	0	0	1.0	0.0	0.2	2.3	0.0
National Barobazar	Kaliganj	Jhenaidah	10	60	260	0	320	0	0	0	0	0	0	0	0	0.9	0.0	0.2	2.5	0.0
New Gorib Shah Clinic	Kaliganj	Jhenaidah	10	60	403	30	493	0	0	0	0	0	0	0	0	1.4	0.0	0.4	3.0	0.0
New Ibna-Sena Clinic	Kaliganj	Jhenaidah	10	12	168	0	180	0	0	0	0	0	0	0	0	0.5	0.0	0.1	2.4	0.0
Peerles Hospital	Moheshpur	Jhenaidah	10	10	54	0	64	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Resedo Pvt. Hospital	Harinakundu	Jhenaidah	10	102	378	0	480	0	0	0	0	0	0	0	0	1.3	0.0	66.0	5.0	0.0
Sajib Pvt. Hospital	Moheshpur	Jhenaidah	10	9	36	0	45	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0
Saleha Clinic	Moheshpur	Jhenaidah	10	15	51	0	66	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Seba Clinic	Kaliganj	Jhenaidah	10	120	287	0	407	0	0	0	0	0	0	0	0	1.1	0.0	0.3	2.5	0.0
Shamima Clinic	Sadar	Jhenaidah	10	52	279	0	331	0	0	0	0	0	0	0	0	0.9	0.0	0.0	0.0	0.0
Shema Clinic	Moheshpur	Jhenaidah	10	14	41	0	55	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Shikha Pvt. Hospital	Harinakundu	Jhenaidah	10	0	170	0	170	0	0	0	0	0	0	0	0	0.5	0.0	33.0	7.0	0.0
Sumi Clinic	Moheshpur	Jhenaidah	10	22	51	0	73	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0
Sumon & Biswas Clinic	Moheshpur	Jhenaidah	10	12	44	0	56	0	0	0	0	0	0	0	0	0.2	0.0	0.0	0.0	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Sumon Clinic	Kaliganj	Jhenaidah	10	141	302	0	443	0	0	0	0	0	0	0	0	1.2	0.0	0.5	4.7	0.0
Sums Uddin Pvt. Hospital	Kotchandpur	Jhenaidah	10	132	154	0	286	0	0	0	0	0	0	0	0	0.8	0.0	0.0	0.0	0.0
Tamanna Clinic	Moheshpur	Jhenaidah	10	13	41	0	54	0	0	0	0	0	0	0	0	0.1	0.0	0.0	0.0	0.0
Tanisha Pvt. Hospital	Shailakupa	Jhenaidah	10	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Taslim Clinic	Sadar	Jhenaidah	10	84	246	0	330	0	0	0	0	0	0	0	0	0.9	0.0	0.0	0.0	0.0
Chitra Surgical Clinic	Voakhali	Narail	10	20	220	0	240	0	0	0	0	0	0	0	0	0.7	0.0	0.0	0.0	0.0
Darush-Shefa Clinic	Voakhali	Narail	10	76	348	0	424	0	0	0	0	0	0	0	0	1.2	0.0	0.0	0.0	0.0
Emon Sergial Clinic	Voakhali	Narail	10	15	680	0	695	0	0	0	0	0	0	0	0	1.9	0.0	0.0	0.0	0.0
Janata Surgical Clinic	Mohila College Road	Narail	10	42	294	0	336	0	0	0	0	0	0	0	0	0.9	0.0	0.0	0.0	0.0
Matri Seba Sangstha	Rupgong Bazar	Narail	10	4	219	0	223	0	0	0	0	0	0	0	0	0.6	0.0	0.0	0.0	0.0
Nayma Surgical Clinic	Fatema Kutir, Voakhali	Narail	10	3	13	0	16	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Niramoy Surgical Clinic	Puratan Bus Terminal, Sadar	Narail	10	35	285	0	320	0	0	0	0	0	0	0	0	0.9	0.0	0.0	0.0	0.0
Anwara Merorial Hospital	Sadar	Satkhira	10	91	268	0	359	0	0	0	0	1015	1265	0	2280	1.0	6.2	0.6	6.7	0.0
City Clinic	Sadar	Satkhira	10	119	264	12	395	0	0	0	0	1015	1265	0	2280	1.1	6.2	0.5	3.9	0.0
Farzana Clinic	Sadar	Satkhira	10	163	287	612	1062	0	4	1	5	1015	1265	0	2280	2.9	6.2	0.7	5.4	0.5
Habibay Surgical Clinic	Sadar	Satkhira	10	53	191	12	256	0	0	0	0	1015	1265	0	2280	0.7	6.2	0.5	6.9	0.0
Islami Bank Community Hospital	Sadar	Satkhira	20	447	501	153	1101	19	23	2	44	1143	2071	127	3341	3.0	9.2	65.0	3.0	4.0
Islamia Hospital	Sadar	Satkhira	30	447	501	153	1101	19	23	1	43	1143	2071	117	3331	3.0	9.1	0.2	1.7	3.9
M AliI Clinic	Sadar	Satkhira	10	119	264	12	395	0	0	0	0	1015	1265	0	2280	1.1	6.2	0.6	6.1	0.0
Nazmun Clinic	Sadar	Satkhira	10	138	248	306	692	2	2	0	4	329	430	0	759	1.9	2.1	0.7	6.9	0.6
New Akota Clinic	Sadar	Satkhira	10	75	164	9	248	0	0	0	0	600	738	0	1338	0.7	3.7	0.8	3.9	0.0
Niramoy Clinic	Sadar	Satkhira	10	227	176	72	475	0	0	0	0	274	259	14	547	1.3	1.5	0.5	5.7	0.0
Sangram Medical Hospital	Sadar	Satkhira	30	437	466	111	1014	1	1	0	2	1348	1410	145	2903	2.8	8.0	0.5	5.3	0.2
Satata Clinic	Sadar	Satkhira	10	150	450	3	603	0	0	0	0	875	876	0	1751	1.7	4.8	0.7	4.1	0.0
Sodesh Clinic	Palash pore	Satkhira	10	43	49	36	128	0	0	0	0	30	170	0	200	0.4	0.5	0.4	6.7	0.0
Surjer Hasi Clinic	Sadar	Satkhira	10	0	274	18	292	0	0	0	0	332	24013	4736	29081	0.8	79.7	0.6	7.7	0.0
Al-Rrazi Clinic	Sherpur	Bogra	10	212	424	73	709	0	0	0	0	615	939	376	1930	1.9	5.3	19.4	1.1	0.0
Burmon Health Care	Sherpur	Bogra	20	118	216	8	342	-	-	-	0	1560	1080	300	2940	0.9	8.1	4.6	1.0	0.0
Mahbub Clinic	Sherpur	Bogra	10	80	220	6	306	0	0	0	0	500	809	50	1359	0.8	3.7	8.4	1.0	0.0
Modern Clinic	Sherpur	Bogra	10	110	201	8	319	-	-	-	0	1505	1040	150	2695	0.9	7.4	8.7	1.0	0.0
Shahin Clinic	Sherpur	Bogra	10	225	409	85	719	0	0	0	0	610	923	381	1914	2.0	5.2	19.7	1.1	0.0
Sheba Nursing Home	Sherpur	Bogra	10	222	424	74	720	0	0	0	0	624	963	387	1974	2.0	5.4	19.7	1.1	0.0
Anowara Clinic & Diagnostic Centre	Sadar	Joypurhat	10	120	80	40	240	0	0	0	0	60	40	20	120	0.7	0.3	13.2	3.0	0.0
Emu G. Hospital	Sadar	Joypurhat	10	103	635	0	738	0	0	0	0	450	421	224	1095	2.0	3.0	80.9	4.0	0.0
Khanjanpur Mission Hospital	Sadar	Joypurhat	10	1381	1816	0	3197	0	0	0	0	8665	11227	3525	23417	8.8	64.2	87.6	1.0	0.0
Komal Memorial Hospital	Sadar	Joypurhat	10	86	760	33	879	0	0	0	0	6	9	0	15	2.4	0.0	72.2	3.0	0.0
New Doctors Clinic	Sadar	Joypurhat	10	300	350	0	650	0	0	0	0	0	0	0	0	1.8	0.0	71.2	4.0	0.0
Padma Clinic & Nursing Home	Sadar	Joypurhat	10	93	932	15	1040	0	0	0	0	0	0	0	0	2.8	0.0	84.2	3.0	0.0
Rawshan Clinic	Sadar	Joypurhat	10	130	100	20	250	0	0	0	0	70	50	30	150	0.7	0.4	13.2	3.0	0.0
Sadman Clinic & Nursing Home	Sadar	Joypurhat	10	102	205	50	357	0	0	0	0	324	486	175	985	1.0	2.7	48.9	5.0	0.0
Square Clinic & Diagnostic Centre	Sadar	Joypurhat	10	77	441	0	518	0	0	0	0	0	0	0	0	1.4	0.0	42.4	3.0	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
The Rawshan Clinic & Diagnostic Centre	Sadar	Joypurhat	10	200	250	30	480	0	0	0	0	210	300	100	610	1.3	1.7	52.6	4.0	0.0
Three Star Clinic	Mohadevpur	Naogaon	10	20	76	0	96	0	0	0	0	0	0	0	0	0.3	0.0	0.3	2.0	0.0
Alfa Clinic	Mohadevpur	Naogaon	10	27	75	0	102	0	0	0	0	0	0	0	0	0.3	0.0	0.3	2.0	0.0
Khaleda Clinic	Mohadevpur	Naogaon	10	33	77	0	110	0	0	0	0	0	0	0	0	0.3	0.0	0.3	2.0	0.0
New Three Star Clinic	Mohadevpur	Naogaon	10	40	80	0	120	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0
New Three Star Clinic	Mohadevpur	Naogaon	10	40	80	0	120	0	0	0	0	0	0	0	0	0.3	0.0	0.2	2.0	0.0
Raninagar Clinic & Diagnostic Centre	Mohadevpur	Naogaon	10	7	295	2	304	0	0	2	2	0	0	0	0	0.8	0.0	0.0	0.0	0.7
Three Star Clinic	Mohadevpur	Naogaon	10	20	76	0	96	0	0	0	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0
Cosmos General Hospital	Lalpur	Natore	20	55	909	16	980	0	0	0	0	714	1412	760	2886	2.7	7.9			0.0
Gopalpur General Hospital	Lalpur	Natore	10	29	205	0	234	0	0	0	0	1150	1173	1480	3803	0.6	10.4			0.0
Muktar General Hospital	Lalpur	Natore	10	80	360	40	480	0	0	0	0	0	0	0	0	1.3	0.0			0.0
Adrisha General Hospital	Sujanagur	Pabna	10	60	110	-	170	-	-	-	0	-	-	-	0	0.5	0.0	4.7	1.0	0.0
Aklima Seba Clinic	Sadar	Pabna	10	82	991	-	1073	-	-	-	0	995	2170	572	3737	2.9	10.2	4.0	3.0	0.0
Al-Madina Clinic	Sadar	Pabna	10	61	418	5	484	-	-	-	0	58	40	23	121	1.3	0.3	4.0	1.0	0.0
Alta Clnic Iswardi	Sadar	Pabna	10	39	212	-	251	-	1	-	1	908	1200	85	2193	0.7	6.0	7.0	1.0	0.4
Anwara Clinic	Sadar	Pabna	10	167	300	-	467	-	-	-	0	-	-	-	0	1.3	0.0	4.0	3.0	0.0
Bangla clinic	Sadar	Pabna	19	74	226	4	304	-	-	-	0	-	-	127	127	0.8	0.3	4.0	1.0	0.0
Boral Clinic	Bhanguria	Pabna	10	111	280	-	391	-	-	-	0	70	179	20	269	1.1	0.7	10.0	1.3	0.0
Chatmohar General Hospital	Chatmohar	Pabna	10	57	274	0	331	0	0	0	0	52	230	224	506	0.9	1.4	9.0	1.0	0.0
Dasuria Chakku Hospital	Sadar	Pabna	10	33	35	-	68	-	-	-	0	807	753	217	1777	0.2	4.9	-	1.0	0.0
Digital Hospital	Sadar	Pabna	10	83	513	-	596	-	-	-	0	120	211	17	348	1.6	1.0	4.0	1.0	0.0
Dipa Clinic	Sadar	Pabna	10	75	520	-	595	-	-	-	0	20	27	4	51	1.6	0.1	4.0	3.0	0.0
Glorious Hospital	Sadar	Pabna	10	132	543	20	695	-	-	-	0	1689	2717	213	4619	1.9	12.7	4.0	3.0	0.0
Gulnahar Polli Clinic	Sadar	Pabna	10	0	0	0	0	0	0	0	0	502	480	6137	7119	0.0	19.5	0.0	0.0	0.0
Halima Clinic	Sadar	Pabna	10	40	247	-	287	-	-	-	0	-	1739	-	1739	0.8	4.8	4.0	1.0	0.0
Hamida Medi Care	Sadar	Pabna	10	27	243	-	270	-	-	-	0	120	40	-	160	0.7	0.4	7.0	1.0	0.0
Hanufa General (eye) Hospital	Sadar	Pabna	10	43	50	-	93	-	-	-	0	1170	2210	110	3490	0.3	9.6	1.0	1.0	0.0
Holy Care Hospital	Sadar	Pabna	10	192	445	-	637	-	-	-	0	-	-	-	0	1.7	0.0	4.0	3.0	0.0
Icchamoti Clinic	Sadar	Pabna	10	15	565	3	583	-	-	-	0	-	-	148	148	1.6	0.4	5.0	3.0	0.0
Islimia Community Hospital	Iswardi	Pabna	10	120	207	1	328	-	-	-	0	120	780	120	1020	0.9	2.8	9.0	1.0	0.0
Iswardi Eye Hospital	Iswardi	Pabna	30	250	271	-	521	-	-	-	0	900	8000	2544	11444	1.4	31.4	1.0	1.0	0.0
Iswardi Eye Hospital & Phaco Centre	Iswardi	Pabna	10	71	95	1	167	-	-	-	0	1715	1778	126	3619	0.5	9.9	1.0	1.0	0.0
Jalal Memorial Hospital	Sadar	Pabna	10	121	175	2	298	-	-	-	0	4270	5900	70	10240	0.8	28.1	8.0	1.0	0.0
Kamini Hospital	Ishwardi	Pabna	10	6	74	2	82	0	0	0	0	623	2119	747	3489	0.2	9.6	2.2	1.0	0.0
Meghna Clinic	Sadar	Pabna	10	59	342	0	401	0	0	0	0	0	0	0	0	1.1	0.0	1.1	1.0	0.0
Milon Mental Clinic	Sadar	Pabna	10	103	-	-	103	--	-	-	0	-	-	-	0	0.3	0.0	4.0	3.0	0.0
Mitu General Hospital	Sadar	pabna	20	531	835	7	1373	-	2	-	2	490	945	98	1533	3.8	4.2	4.0	3.0	0.1
Modern Hospital	Sadar	Pabna	10	85	211	-	296	-	-	-	0	63	75	-	138	0.8	0.4	8.0	1.0	0.0
Mridula General Hospital	Sadar	Pabna	10	27	719	1	747	-	-	3	3	1175	2213	124	3512	2.0	9.6	4.0	3.0	0.4
Muraf Chakku Hospital	Sadar	Pabna	10	191	216	-	407	-	-	-	0	2680	3891	1211	7782	1.1	21.3	3.0	1.0	0.0
Muslim Aid Community Hospital	Sadar	Pabna	15	410	945	89	1444	1	-	1	2	4604	8313	3295	16212	4.0	44.4	4.0	1.1	0.1
New Beauty Clinic	Sadar	Pabna	10	119	415	-	534	-	-	-	0	-	-	-	0	1.5	0.0	4.0	3.0	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
FD.C Hospital	Sadar	Pabna	10	320	400	120	840	-	1	-	1	-	-	-	0	2.3	0.0	5.0	4.0	0.1
Pabna Mental Clinic	Sadar	Pabna	10	100	60	-	160	-	-	-	0	-	-	-	0	0.4	0.0	4.0	1.0	0.0
Pabna Nursing Home	Sadar	Pabna	10	57	171	-	228	-	-	-	0	103	84	7	194	0.6	0.5	4.0	1.0	0.0
Pabna Poly Clinic & Nursing Home	Sadar	Pabna	10	119	275	-	394	-	-	-	0	49	51	23	123	1.1	0.3	4.0	2.0	0.0
Pabna Shishu Hospital	Sadar	Pabna	10	-	-	-	0	-	-	-	0	-	53	102	155	0.0	0.4	-	-	0.0
Popular General Hospital	Sadar	Pabna	19	288	432	-	720	-	-	-	0	520	780	20	1320	2.0	3.6	5.0	2.0	0.0
Protham Clinic	Bhangura	Pabna	6	60	117	-	177	-	-	-	0	74	80	21	175	0.5	0.5	4.0	1.0	0.0
Ruposhi Bangla Clinic	Iswardi	Pabna	10	25	59	-	84	-	-	-	0	378	384	67	829	0.2	2.3	2.0	2.0	0.0
Shahed Anisur Rahman Hospital	Sadar	Pabna	10	150	162	-	312	-	-	-	0	-	-	-	0	0.9	0.0	4.0	1.0	0.0
Shajalal Clinic	Sadar	Pabna	10	250	178	31	459	-	-	-	0	1188	770	52	2010	1.3	5.5	4.0	3.0	0.0
Shovan Seba Clinic	Iswardi	Pabna	10	62	247	5	314	-	-	-	0	24	64	17	105	0.9	0.3	8.0	1.0	0.0
Sudia Hospital	Sadar	Pabna	10	69	445	-	514	-	-	-	0	75	68	13	156	1.4	0.4	4.0	3.0	0.0
Surma Mental Clinic	Sadar	Pabna	10	317	-	-	317	-	-	-	0	27	40	-	67	0.9	0.2	8.0	1.0	0.0
United Hospital	Sadar	Pabna	10	82	312	-	394	-	-	-	0	282	598	51	931	1.1	2.6	10.0	1.3	0.0
Islami Bank Medical College Hospital	Sadar	Rajshahi	63	2385	5334	50	7769	5	3	1	9	49448	40250	3770	93468	21.3	256.1	0.0	0.0	0.1
Khistanio Mission Hospital	Sadar	Rajshahi	20	269	664	101	1034	7	3	0	10	968	2288	452	3708	2.8	10.2	0.0	0.0	1.0
Mukti Clinic	Sadar	Rajshahi	31	544	826	135	1505	3	3	1	7	2247	4561	1276	8084	4.1	22.1	0.0	0.0	0.5
Deffodil Hospital	Belkuchi	Sirajganj	8	188	218	24	430	0	0	0	0	1235	2221	810	4266	1.2	11.7	0.1	5.0	0.0
United General Hospital	Belkuchi	Sirajganj	10	320	410	80	810	0	0	0	0	2191	3899	1210	7300	2.2	20.0	0.2	5.0	0.0
Avesina Hospital Ltd	Sadar	Sirajganj	30	1794	1401	0	3195	23	11	0	34	9551	7045	1222	17818	8.8	48.8	0.0	0.0	1.1
Cental Hospital	Sadar	Sirajganj	10	599	381	0	980	9	6	0	15	2971	1951	478	5400	2.7	14.8	0.0	0.0	1.5
Community Hospital Ltd	Sadar	Sirajganj	10	1084	561	0	1645	6	6	0	12	4110	3014	589	7713	4.5	21.1	0.0	0.0	0.7
Defodial Hospital	Belkuchi	Sirajganj	8	30	35	0	65	0	0	0	0	15810	3981	1289	21080	0.2	57.8	0.0	0.0	0.0
Marie Stops Hospital	Sadar	Sirajganj	0	14	4466	0	4480	0	0	0	0	0	0	0	0	12.3	0.0	0.0	0.0	0.0
Medinova Hospital Ltd	Sadar	Sirajganj	30	1620	1380	0	3000	15	13	0	28	8782	6623	1113	16518	8.2	45.3	0.0	0.0	0.9
North Bengal Medical Collage Hospital	Sadar	Sirajganj	400	10120	7595	0	17715	55	36	0	91	30510	19914	0	50424	48.5	138.1	0.0	0.0	0.5
Ullapara Hospital	Ullapara	Sirajganj	10	325	865	0	1190	0	0	0	0	2070	3615	700	6385	3.3	17.5	0.0	0.0	0.0
United General Hospital	Ullapara	Sirajganj	10	45	49	0	94	0	0	0	0	14091	7810	1210	23111	0.3	63.3	0.0	0.0	0.0
Aurobindo Shishu Hospital	Sadar	Dinajpur	50	0	0	3400	3400	0	0	37	37	0	15427	15427	30854	9.3	84.5	0.0	0.0	1.1
Diabetics Hospital	Sadar	Dinajpur	50	1098	1069	227	2394	24	9	0	33	65904	491	127540	193935	6.6	531.3	233.0	4635.0	1.4
St.Vincent Hospital	Sadar	Dinajpur	100	674	3144	0	3818	1	5	0	6	8446	0	11431	19877	10.5	54.5	0.0	0.0	0.2
Zia Heart Hospitah	Sadar	Dinajpur	50	1620	849	23	2492	159	93	0	252	3090	284	8079	11453	6.8	31.4	0.0	0.0	10.1
Alekjan Maternity Welfare Center	Ulipur	Kurigram	14	0	2511	350	2861	0	3	3	6	0	0	0	0	7.8	0.0	678.6	3.0	0.2
Doctors Community Clinic	Ulipur	Kurigram	10	200	530	120	850	0	3	1	4	0	0	0	0	2.3	0.0	263.3	3.0	0.5
Jonota Clinic	Nageswari	Kurigram	10	64	393	0	457	0	0	0	0	0	0	0	0	1.3	0.0	0.0	0.0	0.0
Morium Eye Hospital	Ulipur	Kurigram	50	2705	2280	530	5515	0	0	0	0	2200	2350	790	5340	15.1	14.6	367.7	3.0	0.0
Uttoron Clinic	Nageswari	Kurigram	10	55	401	36	492	0	0	0	0	0	0	0	0	1.3	0.0	0.0	0.0	0.0
Bagura Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	75	280	0	355	0	0	0	0	0	0	0	0	1.0	0.0	0.5	3.0	0.0
Baishakhi Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	0	68	0	68	0	0	0	0	0	0	0	0	0.2	0.0	0.2	3.0	0.0
Bondhon Hospital & Diagnostic Centre	Sadar	Lalmonirhat	10	78	270	0	348	0	0	0	0	0	0	0	0	1.0	0.0	0.3	3.0	0.0
Ciy Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	93	243	44	380	0	0	0	0	0	0	0	0	1.0	0.0	0.3	3.0	0.0

Table continued

Health facility	Address	District	No. of beds	No. of admissions				No. of deaths				No. of outdoor visits				Average daily number		Bed-occupancy rate (%)	Average length of stay (d)	Hospital death rate (%)
				Male	Female	Child	Total	Male	Female	Child	Total	Male	Female	Child	Total	Admission	Outdoor visit			
Jamuna Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	145	366	0	511	0	0	0	0	0	0	0	0	1.4	0.0	0.4	3.0	0.0
Lalmoni Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	162	281	24	467	0	0	0	0	0	0	0	0	1.3	0.0	0.4	3.0	0.0
Matin Clinic & Nursing home	Sadar	Lalmonirhat	10	54	568	0	622	0	0	0	0	0	0	0	0	1.7	0.0	0.5	3.0	0.0
Monoara Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	252	335	145	732	0	0	0	0	0	0	0	0	2.0	0.0	0.6	3.0	0.0
Niramoy Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	605	180	24	809	0	0	0	0	0	0	0	0	2.2	0.0	0.7	3.0	0.0
Shapla Clinic & Diagnostic Centre	Sadar	Lalmonirhat	10	165	220	45	430	0	0	0	0	0	0	0	0	1.2	0.0	0.4	3.0	0.0
Abdul Aziz Medical Center	Juri	Maulvibazar	10	321	423	0	744	0	0	0	0	345	991	2400	3736	2.0	10.2	87.9	5.6	0.0
Barlekha Poly Clinic	Barlekha	Maulvibazar	10	175	342	0	517	0	0	0	0	13	8	22	43	1.4	0.1	86.7	8.1	0.0
Camelia Duncan Foundation Hospital	Shamshernagar	Maulvibazar	50	1234	1897	0	3131	17	21	0	38	4654	7132	3076	14862	8.6	40.7	86.0	6.8	1.2
Green Health (Pvt) Hospital	Sadar	Maulvibazar	10	342	532	0	874	0	0	0	0	70	105	45	220	2.4	0.6	86.7	4.8	0.0
Noor Jahan (Pvt) Hospital	Sadar	Maulvibazar	10	398	387	0	785	0	0	0	0	145	452	52	649	2.2	1.8	86.3	5.4	0.0
Safe Maternity & Surgical Clinic	Kulaura	Maulvibazar	10	143	897	0	1040	1	0	0	1	325	5708	132	6165	2.8	16.9	86.0	4.1	0.1
Sreemangal Poly Clinic	Sadar	Maulvibazar	10	163	342	0	505	0	0	0	0	206	460	30	696	1.4	1.9	90.0	8.0	0.0
The Holy City (Pvt) Hospital	Sadar	Maulvibazar	30	765	987	0	1752	0	0	0	0	270	330	40	640	4.8	1.8	91.2	6.9	0.0
Unique (Pvt) Hospital	Sadar	Maulvibazar	10	233	435	0	668	2	0	0	2	81	149	22	252	1.8	0.7	87.9	6.2	0.3
Badrunnessa (Pvt) Hospital	Sadar	Maulvibazar	10	232	657	0	889	0	0	0	0	167	489	1095	1751	2.4	4.8	96.0	4.3	0.0
Brahman Bazar Christian Health Project	Sadar	Maulvibazar	35	342	1232	0	1574	0	1	0	1	2432	7843	4011	14286	4.3	39.1	88.0	9.2	0.1
Hope (Pvt) Hospital	Sadar	Maulvibazar	10	234	650	0	884	2	1	0	3	76	132	8	216	2.4	0.6	96.9	4.3	0.3
Life Care (Pvt) Hospital	Sadar	Maulvibazar	20	365	912	0	1277	2	1	0	3	307	367	304	978	3.5	2.7	84.7	6.8	0.2
Medicare Poly Clinic	Sadar	Maulvibazar	10	345	630	0	975	2	1	0	3	54	103	20	177	2.7	0.5	86.7	4.3	0.3
Moulavibazar Poly Clinic	Sadar	Maulvibazar	20	876	1150	0	2026	2	0	0	2	730	450	98	1278	5.6	3.5	83.3	4.3	0.1
Muslim Aid Community Hospital	Brahman Bazar	Maulvibazar	20	1154	1751	0	2905	1	2	0	3	4654	18421	7314	30389	8.0	83.3	93.4	2.7	0.1
Shah Mostafa (Pvt) Hospital	Sadar	Maulvibazar	10	198	321	0	519	1	1	0	2	25	35	20	80	1.4	0.2	99.1	7.1	0.4
Kulaura Poly Clinic	Kulaura	Maulvibazar	10	307	765	0	1072	1	1	0	2	132	720	250	1102	2.9	3.0	88.5	3.8	0.2
Al Falah Hospital	Dargha Gait	Sylhet	20	710	321	290	1321	0	0	0	0	148	106	135	389	3.6	1.1	0.0	0.0	0.0
Ayesha Haque Hospital	Beani Bazar	Sylhet	10	102	432	625	1159	0	0	6	6	373	540	364	1277	3.2	3.5	0.0	3.0	0.5
Ayesha Haque Hospital	Beanibazar	Sylhet	10	102	432	625	1159	0	0	6	6	373	540	364	1277	3.2	3.5	500.0	3.0	0.5
Ayesha Medicare	Lamabazar	Sylhet	20	525	605	30	1160	3	0	0	3	120	45	15	180	3.2	0.5	425.0	3.0	0.3
FPAB	Sadar	Sylhet	699	2144	861	3704	6709	0	0	0	0	878	770	2472	4120	18.4	11.3	824.0	0.0	0.0
Hill View Hospital	Beanibazar	Sylhet	8	0	379	0	379	0	0	0	0	164	345	16	525	1.0	1.4	0.0	0.0	0.0
IBN Sina Hospital	Sadar	Sylhet	80	4501	4709	0	9210	105	46	7	158	220	250	40	510	25.2	1.4	0.9	4.0	1.7
Jalabad Blind Welfare Association	Sadar	Sylhet	10	253	289	3	545	0	0	0	0	8754	10583	2140	21477	1.5	58.8	14.8	3.8	0.0
Jalalabad Eye Hospital	Majortila	Sylhet	10	253	289	3	545	0	0	0	0	8754	10583	2140	21477	1.5	58.8	0.2	4.0	0.0
Jalalabad Ragib Rabeya Medical College Hospital	Sadar	Sylhet	925	12661	16157	10725	39543	260	144	473	877	68796	80935	52607	202338	108.3	554.4	0.6	5.0	2.2
Mathry Chaya General Hospital	Beani Bazar	Sylhet	10	67	522	41	630	0	0	0	0	123	267	119	509	1.7	1.4	0.0	0.0	0.0
Paradise Medical Complex	Balaganj	Sylhet	6	238	576	575	1389	0	0	4	4	2362	4030	2702	9094	3.8	24.9	0.0	0.0	0.3
Popular General Hospital	Mirboxtula	Sylhet	10	193	507	215	915	0	0	0	0	102	97	54	253	2.5	0.7	0.0	0.0	0.0
RR Mental Hospital	Zinda Bazar	Sylhet	20	274	107	39	420	1	0	0	1	0	0	0	0	1.2	0.0	0.0	0.0	0.2
Safe Way Hospital Pvt Ltd	Mirzaganj	Sylhet	20	137	276	10	423	0	0	0	0	0	2	0	2	1.2	0.0	30.0		0.0
Sylhet Adhunik Chakkhu Hospital	Sadar	Sylhet	20	3672	3201	0	6873	0	0	0	0	15316	18569	2700	36585	18.8	100.2	0.0	0.0	0.0
Sylhet Womens' Medical College Hosptial	Mirboxtulla	Sylhet	500	6935	9855	4015	20805	62	78	81	221	61857	97940	12027	171824	57.0	470.8	0.6	5.0	1.1

Annex to Chapter 8

Mortality profiles 2013 from various medical college hospitals, with names of fatal diseases and conditions

Sher-e-Bangla Medical College Hospital (total deaths: 3,270)

ICD 10 code with name of disease/condition	No. of cases	%
J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	220	6.73
I612 Intracerebral hemorrhage in hemisphere, unspecified	212	6.48
P219 Birth asphyxia, unspecified	185	5.66
I110 Hypertensive heart disease with (congestive) heart failure	168	5.14
J159 Bacterial pneumonia, unspecified	159	4.86
T600 Organophosphate and carbamate insecticides	127	3.88
I210 Acute transmural myocardial infarction of anterior wall	117	3.58
N189 Chronic renal failure, unspecified	102	3.12
V011 Pedestrian injured in collision with pedal cycle, traffic accident	96	2.94
G049 Encephalitis, myelitis, and encephalomyelitis, unspecified	71	2.17

Chittagong Medical College Hospital (total deaths: 7,508)

ICD 10 code with name of disease/condition	No. of cases	%
P21 Birth asphyxia	811	10.8
S02 Fracture of skull and facial bones	399	5.31
I64 Stroke, not specified as hemorrhage or infarction	383	5.1
A419 Septicemia, unspecified	372	4.95
J449 Chronic obstructive pulmonary disease, unspecified	260	3.46
E100 Insulin-dependent diabetes mellitus with coma	173	2.3
I21 Acute myocardial infarction	169	2.25
I50 Heart failure	159	2.12
P07 Disorders related to short gestation and low birthweight, NEC	121	1.61
G04 Encephalitis, myelitis and encephalomyelitis	106	1.41

Comilla Medical College Hospital (total deaths: 1,678)

ICD 10 code with name of disease/conditions	No. of cases	%
P522 Intraventricular (non-traumatic) hemorrhage, grade 3, of fetus and newborn	469	27.95
I219 Acute myocardial infarction, unspecified	231	13.77
J150 Pneumonia due to *Klebsiella pneumoniae*	141	8.4
G039 Meningitis, unspecified	118	7.03
T571 Phosphorus and its compounds	95	5.66
V011 Pedestrian injured in collision with pedal cycle, traffic accident	91	5.42
A414 Septicemia due to anaerobes	86	5.13
O159 Eclampsia, unspecified as to time period	31	1.85
R101 Pain localized to upper abdomen	24	1.43
K561 Intussusception	21	1.25

Shaheed Suhrawardy Medical College Hospital (total deaths: 691)

ICD 10 code with name of disease/condition	No. of cases	%
G46 Vascular syndromes of brain in cerebrovascular diseases	124	17.95
A419 Septicemia, unspecified	105	15.2
E117 Non-insulin-dependent diabetes mellitus with multiple complications	72	10.42
C76 Malignant neoplasm of other and ill-defined sites	60	8.68
K729 Hepatic failure, unspecified	42	6.08
G03 Meningitis due to other and unspecified causes	37	5.35
E649 Sequelae of unspecified nutritional deficiency	32	4.63
A199 Miliary tuberculosis, unspecified	27	3.91
T81 Complications of procedures, NEC	25	3.62
V029 Pedestrian injured in collision with two- or three-wheeler motor vehicle, unspecified whether traffic or non-traffic accident	21	3.04

Faridpur Medical College Hospital (total deaths: 1,783)

ICD 10 code with name of disease/condition	No. of cases	%
G46 Vascular syndromes of brain in cerebrovascular diseases	426	23.89
I219 Acute myocardial infarction, unspecified	191	10.71
P210 Severe birth asphyxia	178	9.98
P07 Disorders related to short gestation and low birthweight, NEC	141	7.91
T44 Poisoning by drugs primarily affecting the autonomic nervous system	116	6.51
J46 Status asthmaticus	92	5.16
J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	65	3.65
N189 Chronic renal failure, unspecified	47	2.64
R100 Acute abdomen	38	2.13
V73 Bus occupant injured in collision with car, pick-up truck or van	36	2.02

Dhaka Medical College Hospital (total deaths: 8,866)

ICD 10 code with name of disease/condition	No. of cases	%
V99 Unspecified transport accident	1565	17.65
I64 Stroke, not specified as hemorrhage or infarction	1284	14.48
T142 Fracture of unspecified body region	890	10.04
S069 Intracranial injury, unspecified	882	9.95
I11 Hypertensive heart disease	511	5.76
X85 Assault by drugs, medicaments and biological substances	456	5.14
A419 Septicemia, unspecified	440	4.96
J189 Pneumonia, unspecified	366	4.13
J449 Chronic obstructive pulmonary disease, unspecified	282	3.18
N19 Unspecified renal failure	279	3.15

Sir Salimullah Medical College Hospital (total deaths: 1,955)

ICD 10 code with name of disease/condition	No. of cases	%
I469 Cardiac arrest, unspecified	137	7.01
J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	118	6.04
P210 Severe birth asphyxia	108	5.52
P070 Extremely low birthweight	102	5.22
A419 Septicemia, unspecified	99	5.06
I608 Other subarachnoid hemorrhage	80	4.09
I461 Sudden cardiac death, so described	77	3.94
J189 Pneumonia, unspecified	72	3.68
I639 Cerebral infarction, unspecified	64	3.27
T600 Organophosphate and carbamate insecticides	61	3.12

Mymensingh Medical College Hospital (total deaths: 7,675)

ICD 10 code with name of disease/condition	No. of cases	%
P20 Intrauterine hypoxia	960	12.51
I62 Other non-traumatic intracranial hemorrhage	960	12.51
I21 Acute myocardial infarction	444	5.79
P05 Slow fetal growth and fetal malnutrition	324	4.22
N18 Chronic renal failure	300	3.91
A41 Other septicemia	252	3.28
V70 Bus occupant injured in collision with pedestrian or animal	240	3.13
G04 Encephalitis, myelitis, and encephalomyelitis	204	2.66
J44 Other chronic obstructive pulmonary disease	204	2.66
T44 Poisoning by drugs primarily affecting the autonomic nervous system	132	1.72

Shahid Ziaur Rahman Medical College Hospital (total deaths: 2,881)

ICD 10 code with name of disease/condition	No. of cases	%
I679 Cerebrovascular disease, unspecified	345	11.98
P219 Birth asphyxia, unspecified	273	9.48
I219 Acute myocardial infarction, unspecified	200	6.94
P07 Disorders related to short gestation and low birthweight, NEC	167	5.8
V99 Unspecified transport accident	125	4.34
X68 Intentional self-poisoning by and exposure to pesticides	120	4.17
J449 Chronic obstructive pulmonary disease, unspecified	70	2.43
I509 Heart failure, unspecified	66	2.29
J189 Pneumonia, unspecified	48	1.67
A86 Unspecified viral encephalitis	44	1.53

Dinajpur Medical College Hospital (total deaths: 1,448)

ICD 10 code with name of disease/condition	No. of cases	%
G464 Cerebellar stroke syndrome	292	20.17
I219 Acute myocardial infarction, unspecified	223	15.4
V021 Pedestrian injured in collision with two- or three-wheeler motor vehicle, traffic accident	186	12.85
S06 Intracranial injury	145	10.01
T509 Other and unspecified drugs, medicaments, and biological substances	132	9.12
A419 Septicemia, unspecified	109	7.53
J449 Chronic obstructive pulmonary disease, unspecified	105	7.25
I50 Heart failure	67	4.63
X000 Exposure to uncontrolled fire in building or structure, home	56	3.87
G040 Acute disseminated encephalitis	49	3.38

M.A.G. Osmani Medical College Hospital, Sylhet (total deaths: 4,318)

ICD 10 code with name of disease/condition	No. of cases	%
I64 Stroke, not specified as hemorrhage or infarction	404	9.36
A419 Septicemia, unspecified	370	8.57
J449 Chronic obstructive pulmonary disease, unspecified	160	3.71
I67 Other cerebrovascular diseases	156	3.61
P21 Birth asphyxia	152	3.52
S099 Unspecified injury of head	124	2.87
V89 Motor- or nonmotor-vehicle accident, type of vehicle unspecified	113	2.62
G04 Encephalitis, myelitis and encephalomyelitis	86	1.99
J18 Pneumonia, organism unspecified	72	1.67
P36 Bacterial sepsis of newborn	67	1.55

Rajshahi Medical College Hospita (total deaths: 5,185)

ICD-10 code with name of disease/condition	No. of cases	%
I64 Stroke, not specified as hemorrhage or infarction	1280	24.69
V99 Unspecified transport accident	1218	23.49
S069 Intracranial injury, unspecified	672	12.96
I11 Hypertensive heart disease	615	11.86
J45 Asthma	443	8.54
T142 Fracture of unspecified body region	319	6.15
N19 Unspecified renal failure	260	5.01
J449 Chronic obstructive pulmonary disease, unspecified	211	4.07
J189 Pneumonia, unspecified	176	3.39
X85 Assault by drugs, medicaments and biological substances	89	1.72

Annex to Chapter 9

Year-wise malaria cases by type and death rate

Year	Total cases	*P. falciparum*		*P. vivax*		Death	
	No.	No.	%	No.	%	No.	%
2000	54223	39272	72.4	14951	27.6	478	0.88
2001	54216	39274	72.4	14942	27.6	490	0.90
2002	62269	46418	74.5	15851	25.5	588	0.94
2003	54654	41356	75.7	13298	24.3	577	1.06
2004	58894	46402	78.8	12492	21.2	535	0.91
2005	48121	37679	78.3	10442	21.7	501	1.04
2006	32857	24828	75.6	8029	24.4	307	0.93
2007	59857	46791	78.2	13066	21.8	228	0.38
2008	84690	70281	83.0	14409	17.0	1544	1.82
2009	63873	57020	89.3	6853	10.7	47	0.07
2010	55873	52049	93.2	3824	6.8	37	0.07
2011	51773	49194	95.0	2579	5.0	36	0.07
2012	29518	27819	94.2	1699	5.8	11	0.04
2013	26891	25908	96.3	983	3.7	15	0.001
Average per year	**52694**	**43164**	**81.9**	**10187**	**19.3**	**385**	**0.65**

Distribution of malaria cases and deaths in endemic districts of Bangladesh (2012)

District	*Falciparum* malaria		*Vivax* malaria	Total cases	Death
Sherpur	31		12	43	-
Mymensingh	72		2	74	-
Netrakona	192		7	199	1
Kurigram	12		52	64	-
Sylhet	332		28	360	-
Habiganj	33		1	34	-
Sunamganj	477		11	488	-
Maulvibazar	160		38	198	-
Chittagong	603		45	648	2
Khagrachhari	4031		65	4096	7
Rangamati	7882		94	7976	2
Bandarban	9174		285	9454	3
Cox's Bazar	2909		343	3252	-
Total	**25908**		**983**	**26928**	**15**

List of 34 districts endemic for filariasis according to ICT card test survey (May-June 2004) and microfilaria survey till 2008

Division	District	Division	District	Division	District	Division	District
Rangpur	Panchagarh Thakurgaon Nilphamari Lalmonirhat Rangpur Kurigram Dinajpur	Rajshahi	Rajshahi Chapainowabganj Sirajganj Pabna Bogra	Khulna	Meherpur Narail Bagerhat Chuadanga Jhenaidah Kushtia Feni Laxmipur Bandarban	Dhaka	Dhaka Gopalganj Munshiganj Narsingdi Gazipur Jamalpur Narayanganj
		Barisal	Pirojpur Jhalokathi Barguna Barisal Patuakhali	Sylhet	Habiganj		

Year-wise mass drug administration rounds (2001-2013) and coverage

Year	No. of districts	Total population (million)	Reported coverage (%)	Observed coverage bysurvey (%)	Actual coverage among eligible (%)
2001	1	0.81	95.5	93.0	ND*
2002	4	5.18	93.6	83.2	87.3
2003	6	8.73	93.3	77.9	81.9
2004	10	11.75	98.6	ND*	ND*
2005	12	20.16	90.3	78.0	82.2
2006	13	23.92	92.2	78.2	82.2
2007	17	31.0	91.5	82.4	84.3
2008	20	42.0	90.53	79.38	83.06
2009	19	35.0	96.87	83.33	85.76
2010	19	35.0	92.47	60.23	62.98
2011	14	29.70	97.14	92.35	94.90
2012	9	16.67	98.11	89.76	92.78
2013	4	8.66	98.86	88.9	93.26

Reported year-wise coverage of school deworming program through albendazole

Year	Round	No. of districts covered	No. of children		Reported coverage (%)
			Targeted	Treated	
2008	November	64	15743159	15482778	94.0
2009	May	64	19303404	19101496	98.0
	November	64	19303404	18782212	97.0
2010	May	64	19837612	19440860	98.0
	November	64	21971611	21745757	99.0
2011	May	64	22070512	21735040	98.5
	November	64	22082923	21992383	99.6
2012	May	64	22263213	22040581	99.0
	November	64	22263192	22038334	99.0
2013	April	64	24986323	24799113	99.3
	October	64	25089864	24898332	99.2

List of 37 districts under 4 divisions where mass dog vaccination was done in 2012

District	No. of wards	Dogs counted	Dogs vaccinated	Coverage in %
Rangpur division				
Rangpur	15	2203	1907	86.6
Gaibandha	9	705	538	76.3
Kurigram	9	1105	845	76.5
Lalmonirhat	9	886	733	82.7
Nilphamari	9	1668	1353	81.1
Dinajpur	12	2036	1601	78.6
Panchagarh	9	2036	815	40.0
Thakurgaon	12	1150	950	82.6
Sub-total in 8 districts	**84**	**10784**	**9001**	**83.5**
Rajshahi division				
Naogaon	9	1627	1485	91.3
Chapainowabganj	15	1298	1054	81.2
Bogra	21	3012	2591	86.0
Joypurhat	9	821	621	75.6

Table continued

District	No. of wards	Dogscounted	Dogs vaccinated	Coverage in %
Natore	9	1257	954	75.9
Sirajganj	15	1662	1446	87.0
Pabna	15	1125	1084	96.4
Rajshahi	12	5172	4397	85.0
Sub-total in 8 districts	**105**	**15974**	**13632**	**85.3**
Sylhet division				
Habiganj	9	575	524	91.1
Maulvibazar	9	454	429	94.5
Sunamganj	9	629	560	89
Sub-total in 3 districts	**27**	**1658**	**1513**	**91.3**
Dhaka division				
Narayanganj	27	4243	3323	78.3
Gazipur	9	1826	1570	86.0
Gazipur (Tongi only)	21	3642	3036	83.4
Narsingdi	9	1320	1250	94.7
Shariatpur	9	1055	976	92.5
Rajbari	9	346	313	90.5
Madaripur	9	770	625	81.2
Gopalganj	9	611	527	86.3
Faridpur	9	1253	1059	84.5
Tangail	21	1183	956	80.8
Kishoreganj	9	1490	1341	90.0
Mymensingh	21	1761	1510	85.7
Netrakona	9	1350	1173	86.9
Sherpur	9	755	635	84.1
Jamalpur	9	1125	1024	91.0
Manikganj	9	1249	1097	87.8
Munshiganj	9	1278	1139	89.1
Sub-total in 17 districts	**207**	**25257**	**21554**	**85.3**
Total in 36 districts	**423**	**53673**	**45700**	**85.1**

Year-wise number of rabies-related deaths at the Infectious Disease Hospital, Mohakhali, Dhaka

Year	No. of rabies-related deaths
2006	167
2007	166
2008	165
2009	164
2010*	58
2011	109
2012	88

*(Jul-Dec)

Nipah or Nipah-like viralencephalitis in Bangladesh (2001 to 2012)

Duration	District	No. of cases	No. of deaths	Case fatality rate
April-May 2001	Meherpur	13	9	69%
January 2003	Naogaon	12	8	67%
January 2004; April 2004	Rajbari; Faridpur	31; 36	23; 27	74%; 75%
Jan-March 2005	Tangail	12	11	92%
Jan-Feb 2007; March 2007; April 2007	Thakurgaon; Kushtia, Pabna, Natore; Naogaon	7; 8; 3	3; 5; 1	43%; 63%; 33%
February 2008; April 2008	Manikganj; Rajbari and Faridpur	4; 7	4; 5	100%; 71%
Jan 2009	Gaibandha, Rangpur, and Nilphamari, Rajbari	3; 1	0;1	0%; 100%
Feb-Mar 2010	Faridpur, Rajbari, Gopalganj, and Madaripur	16	14	87.5%
Jan-Feb 2011	Lalmohirhat, Dinajpur, Comilla, Nilphamari, and Rangpur	44	40	91%
Jan-Mar 2011	Joypurhat, Rajshahi, Natore, Rajbari, and Gopalganj	12	10	83%
Jan-Feb 2012	Joypurhat, Rajshahi	18	13	72.2%
	Total	**215**	**164**	**76.3%**

Year-wise tuberculosis case notification by type (2006-2013)

Year	Residence of population	No. of tuberculosis cases				Total
		Smear-positive		Smear-negative	Extra pulmonary	
		New	Replase	New	New	
2006	Rural/upazila	89704	2645	16717	9707	11773
	Urban/metropolitan	9255	1279	5409	3499	19442
	CDC	2806	287	2375	1155	6623
	Total	**101765**	**4211**	**24501**	**14361**	**144838**
2007	Rural/upazila	91606	2517	15852	10861	120836
	Urban/metropolitan	10264	1049	5449	4164	20926
	CDC	2437	222	1934	1093	5686
	Total	**104307**	**3788**	**23235**	**16118**	**147448**
2008	Rural/upazila	93659	2753	15069	12825	124306
	Urban/metropolitan	10289	1165	5660	4486	21600
	CDC	2425	220	1463	1048	5156
	Total	**106373**	**4138**	**22192**	**18359**	**151062**
2009	Rural/upazila	96333	2692	17759	15768	132552
	Urban/metropolitan	10390	1136	5829	4872	22227
	CDC	2171	150	1548	1225	5094
	Total	**108894**	**3978**	**25136**	**21865**	**159873**
2010	Rural/upazila	93937	2101	15539	17255	128832
	Urban/metropolitan	9977	770	4788	4943	20478
	CDC	1858	129	1298	1308	4593
	Total	**105772**	**3000**	**21625**	**23506**	**153903**
2011	Rural/upazila	87743	1889	16433	20340	126405
	Urban/metropolitan	9391	698	4442	5648	20179
	CDC	1814	114	1046	1341	4315
	Total	**98948**	**2701**	**21921**	**27329**	**150899**
2012	Rural/upazila	95132	2135	18856	22506	138629
	Urban/metropolitan	10068	820	4640	6849	22377
	CDC	1640	112	955	1194	3901
	Total	**106840**	**3067**	**24451**	**30549**	**164907**
2013	Rural/upazila	94668	2024	36036	25081	157809
	Urban/metropolitan	9372	751	5367	7393	22883
	CDC	1501	93	990	1231	3815
	Total	**105541**	**2868**	**42393**	**33705**	**184507**

Distribution of newly-detected leprosy cases by division of Bangladesh (2009-2013)

Division	Year	No. of cases				Registered prevalence per 10,000 population
		Population	MB	PB	Total	
Barisal	2009	9170109	10	1	11	0.01
	2010	9254080	4	-	4	0.0
	2011	9338999	1	1	2	0.002
	2012	9424877	2	2	4	0.004
	2013	9511728	5	-	5	0.005
Chittagong	2009	28901453	400	358	758	0.19
	2010	29387800	226	202	428	0.16
	2011	29883564	229	141	370	0.122
	2012	30388960	241	227	468	0.111
	2013	30904222	266	68	334	0.108
Dhaka	2009	47845021	652	930	1582	0.26
	2010	48795514	542	897	1439	0.24
	2011	49771330	563	893	1546	0.227
	2012	50776361	454	7785	1239	2.47
	2013	51808535	519	469	988	0.019
Khulna	2009	17163458	50	15	65	0.34
	2010	17410525	52	16	68	0.03
	2011	17661430	49	12	610	0.037
	2012	17916236	49	9	58	0.03
	2013	18175007	56	4	60	0.033
Rajshahi	2009	35208052	916	1537	2453	0.53
	2010	35702832	697	1269	1966	0.44
	2011	36204971	697	1007	1704	0.378
	2012	36714583	729	919	1648	0.41
	2013	37231781	754	659	1413	0.038
Sylhet	2009	9350784	218	151	369	0.45
	2010	9496717	199	79	278	0.41
	2011	9644939	169	118	287	0.384
	2012	9795488	168	91	259	0.344
	2013	9948399	210	77	287	0.288
Total	2009	147638877	2246	2992	5238	0.28
	2010	150047468	1720	2463	4183	0.24
	2011	152505233	1798	2172	3970	0.216
	2012	155016505	1643	2033	3676	0.223
	2013	157579672	1810	1277	3087	0.196

Division-wise leprosy cases who completed MDT (multidrug treatment) in Bangladesh (2010-2013)

Division	*Mycobacterium* (MB method) (>5 lesions)				Phosphate buffer (PB method) (1 to 5 lesions)				Total			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Dhaka	644	539	454	440	583	816	785	608	1227	1355	1239	1048
Barisal	2	2	2	4	0	1	2	0	2	3	4	4
Chittagong	281	346	241	190	220	185	227	134	501	531	468	324
Sylhet	172	196	168	154	121	79	91	80	293	275	259	234
Khulna	42	44	49	32	16	20	9	5	58	64	57	37
Rajshahi	826	798	729	689	1425	1010	919	1101	2259	1808	1648	1790
Total	**1967**	**1925**	**1643**	**1509**	**2365**	**2111**	**2033**	**1928**	**4332**	**4036**	**3676**	**3437**
(%)	**(45.41)**	**(47.7)**	**(44.5)**	**(43.9)**	**(54.59)**	**(52.3)**	**(54.5)**	**(56.1)**	**(100)**	**(100)**	**(100)**	**(100)**

New cases of HIV infection by occupation in Bangladesh (2012)

Occupation	New HIV	%
Barber and Bar dancer	3	0.9
Drug seller	1	0.3
Guard	1	0.3
Hijra	1	0.3
Painter	1	0.3
Child	2	0.6
Cook	2	0.6
Hawker	2	0.6
Tailor	2	0.6
Transport worker	3	0.9
Garments worker	4	1.2
Paper collector	4	1.2
Farmer	5	1.5
Rickshaw-puller	5	1.5
Driver	6	1.8
Tokai	7	2.1
Student	11	3.3
Sex worker	12	3.6
Ex. migrant worker	17	5.0
Laborer	17	5.0
Businessmen	25	7.4
Service-holder	25	7.4
Housewife	72	21.3
Unemployed	72	21.3
Other	26	7.7

Annex to Chapter 11

Number of admissions, outdoor visits, average length of stay, and bed-occupancy rates at the National Institute of Cardiovascular Diseases (NICVD) (2002-2013)

Year	Admission (N)		Outdoor visit (N)					Average length of stay (d)	Bed-occupancy rate (%)
	Total	Daily average	Male	Female	Child	Total	Daily average		
2002	17081	47	52740	29532	4674	86944	238	6.9	129.6
2003	20083	55	54550	31939	5150	91639	251	7.1	157.8
2004	21522	59	56482	31250	4857	92589	253	6.9	164.0
2005	22419	62	59950	34608	5497	100055	274	6.5	160.4
2006	24376	67	61565	34861	6060	102486	281	6.5	175.8
2007	29147	80	76732	41792	7417	125941	345	5.5	174.8
2008	33946	93	91147	47889	8534	147570	403	5.2	147.7
2009	41554	114	99102	51539	9367	160008	438	5.2	141.8
2010	42779	117	100868	51364	9726	161958	444	5.4	152.8
2011	43275	119	103930	50081	9802	163813	449	5.4	146.6
2012	44559	122	113157	51488	9721	174366	476	5.2	153.2
2013	43341	119	113901	50606	7762	172269	472	5.2	152.1

Number of exercise tolerance tests (ETTs) done in the National Institute of Cardiovascular Diseases (NICVD) from 2001 to 2013

Year	Male	%	Female	%	Total	%
2001	210	89.7	24	10.3	234	100.0
2002	254	49.9	55	10.8	509	100.0
2003	731	87.8	102	12.2	833	100.0
2004	828	83.2	167	16.8	995	100.0
2005	823	82.1	180	17.9	1003	100.0
2006	1233	79.3	321	20.7	1554	100.0
2007	1437	82.7	301	17.3	1738	100.0
2008	1798	84.1	339	15.9	2137	100.0
2009	1610	85.2	288	15.2	1889	100.0
2010	1549	88.0	212	12.0	1761	100.0
2011	1353	80.6	323	19.2	1678	100.0
2012	1945	79.6	497	20.4	2442	100.0
2013	1684	81.9	372	18.1	2056	100.0

Number of myocardial perfusion imaging done in the National Institute of Cardiovascular Diseases (NICVD) from 2003 to 2013

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
No.	8	21	16	0	21	69	30	104	152	147	139

Number of different cath lab procedures performed in the NICVD from 2003 to 2013

Procedure		Year										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Coronary angiography		2827	3210	2780	3105	3266	3980	4437	4711	4426	4881	4239
Cardiac cath		308	225	227	229	295	380	340	334	251	256	240
Angiography	Renal	13	69	6	-	-	-	1	6	12	1	5
	Peripheral	42	93	85	106	87	112	112	124	124	120	150
	Total	**55**	**162**	**91**	**106**	**87**	**112**	**113**	**130**	**136**	**121**	**155**
Angioplasty	Renal	-	-	-	-	-	-	9	7	17	6	4
	Peripheral	-	-	4	7	43	23	3	18	12	22	13
	Total	**-**	**-**	**4**	**7**	**43**	**23**	**12**	**25**	**29**	**28**	**17**
Other interventions	PCI	371	599	488	584	574	889	1149	1312	1254	1681	1828
	PTMC	189	273	295	280	20	130	154	187	117	137	137
	TPM	646	715	708	675	850	741	950	647	905	1090	910
	PPM	320	333	368	321	359	414	487	402	418	461	439
	EPS&RFA	-	-	-	161	204	113	177	66	72	56	57
	Deviceclosure	-	-	-	1	-	-	-	SS0	-	-	-
	Others	12	13	11	4	-	18	40	56	34	97	93
	Total	**1538**	**1933**	**1870**	**2026**	**2007**	**2305**	**2957**	**2670**	**2800**	**3522**	**3464**

Number of heart and vascular surgeries performed in the NICVD from 2000 to 2013

Year	Open-heart surgery					Closed- heart surgery	Vascular surgery		
	CABG	Valve	Congenital	Other	Total		Routine	Emergency	Total
2000	44	133	88	26	291	186	74	213	287
2001	60	134	133	3	330	157	100	193	293
2002	112	89	210	4	415	151	114	232	346
2003	170	142	162	22	496	140	69	153	222
2004	180	159	205	17	561	95	92	208	300
2005	267	102	237	20	626	93	90	206	296
2006	226	113	255	28	622	70	95	405	500
2007	188	165	256	46	655	58	121	447	568
2008	233	182	327	21	763	63	152	840	992
2009	218	264	364	11	857	71	219	1001	1220
2010	152	304	365	37	859	88	254	1036	1290
2011	101	207	342	67	717	98	183	1640	1823
2012	175	249	468	57	949	82	254	1274	1528
2013	147	293	450	26	916	41	265	1214	1479
Total	2273	2536	3862	385	9057	1393	2082	9062	11144

Number of patients attending the outdoor of National Center for Control of Rheumatic Fever and Heart Diseases (NCCRFHD) in different months of 2012 (showing age and sex distribution)

Month	Age and sex																	
	1-4 year(s)			5-14 years			15-24 years			25-49 years			50+ years			Grand total		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Jan	14	27	41	349	427	776	316	693	1009	151	330	481	30	32	62	860	1509	2369
Feb	23	11	34	350	346	696	372	592	964	207	431	638	42	48	90	994	1428	2422
Mar	14	17	31	421	508	929	365	746	1111	156	371	527	27	19	46	983	1661	2644
Apr	20	6	26	374	327	701	360	575	935	165	429	594	45	25	70	964	1362	2326
May	9	27	36	413	550	963	346	789	1135	155	343	498	23	31	54	946	1740	2686
June	19	49	68	278	439	717	265	571	836	236	458	694	56	61	117	854	1578	2432

Table continued

Month	Age and sex																	
	1-4 year(s)			5-14 years			15-24 years			25-49 years			50+ years			Grand total		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
July	17	5	22	362	321	683	429	607	1036	188	388	576	62	52	114	1058	1373	2431
Aug	-	-	-	189	337	526	399	535	934	55	32	87	25	34	59	668	938	1606
Sep	3	10	13	343	464	807	431	656	1087	242	347	589	62	58	120	1081	1535	2616
Oct	13	1	14	296	407	703	294	568	862	218	386	604	65	79	144	886	1441	2327
Nov	11	9	20	244	352	596	298	541	839	194	314	508	41	37	78	788	1253	2041
Dec	1	16	17	234	315	549	220	513	733	53	207	260	13	7	20	521	1058	1579
Total	144	178	322	3853	4793	8646	4095	7386	11481	2020	4036	6056	491	483	974	10603	16876	27479

M=Male, F=Female

Number of outdoor and indoor patients from 2009 to 2013 at the National Institute of Kidney Diseases & Urology (NIKDU), with male, female and child disaggregation

OPD/ Indoor	2009				2010				2011				2012				2013			
	M	F	C	Total	M	F	C	Total	M	F	C	Total	M	F	C	Total	M	F	C	Total
OPD (old & new pts)	32522	17081	3595	53198	33246	17406	3056	53708	33988	16948	3176	54112	32098	15179	3140	50417	34566	17100	3071	54737
OPD (new pts)	32160	12240	3548	38584	25579	13510	3036	42125	25018	13193	3176	41387	27663	12913	3130	43706	30893	15280	3062	49235
OPD (old pts)	7777	3961	495	12233	7667	3866	20	11553	8970	3855	0	12825	4435	2266	10	6711	3673	1820	9	5502
Indoor	2397	1462	447	4306	2309	1357	418	4084	2370	1378	476	4224	2563	1373	503	4439	2742	1608	391	4741

M=Male, F=Female, C=Child

Number of new outdoor patients and the number of emergency visits and admissions in the NIMHR from 2007 to 2012

Year	Sex and age-group	OPD (new patients)	Indoor patients	Emergency patients
2007	Male	8959	671	-
	Female	5175	349	-
	Total	14134	1020	-
2008	Male	12692	749	-
	Female	9209	427	-
	Total	21901	1176	-
2009	Male	12427	876	-
	Female	9478	527	-
	Total	21905	1403	-
2010	Male	6506	489	382
	Female	4710	300	242
	Total	11216	789	624
2011	Male	13420	1136	1017
	Female	9968	636	594
	Total	23388	1772	1611
2012	Male	14959	1249	1159
	Female	8939	679	667
	Child	1610	102	127
	Total	25508	2030	1953
2013	Male	13382	1320	1302
	Female	8814	744	731
	Child	2780	76	70
	Total	24976	2140	2103

Annex to Chapter 15

Bangladesh Medical Research Council (BMRC)

Seminars, workshops, and symposia

1. Workshop on Project Development, Data Collection, Data Analysis, and Report Writing, held on 6 April to 30 May 2013 at BMRC, Mohakali, Dhaka. 20 participants attended from medical university, different medical colleges, postgraduate institutions, general hospitals, and upazila health complexes.
2. Seminar on availability and accessibility of opioid to the end-users, held on 7 February 2013 at BMRC, Mohakhali, Dhaka. In total 37 participants from medical university, different medical colleges, medical institutions, Ministry of Home Affairs, Department of Narcotics Control, pharmaceutical companies and BMRC personnel attended the seminar
3. Workshop on Biostatistics and Different Software in Health Research held on 09-13 March 2013 and 10-14 March 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 40 participants from medical university, postgraduate institutions, different medical colleges, dental colleges, and upazila health complexes attended the workshop.
4. Seminar on Recommendation on Improving Opioid Availability and Accessibility to the End-user in Bangladesh held on 11 April 2013 at BMRC, Mohakhali, Dhaka. In total, 22 participants from medical university, medical institutions, Department of Narcotics Control, pharmaceuticals company, medical doctors of various disciplines, and BMRC personnel attended the seminar.
5. Workshop on Biostatistics in Health System Research, held on 05-09 May 2013 and 02-06 June 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 39 participants from medical university, postgraduate institutions, different medical colleges, dental colleges, and upazila health complexes attended the workshop.
6. Workshop on How to Write a Scientific Paper, held on 12-16 May 2013 and 02-06 June 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 40 participants from medical university, postgraduate institutions, different medical colleges, dental colleges, and upazila health complexes attended the workshop.
7. Workshop on Research Management, held on 19-22 May 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 20 participants from medical university, postgraduate institutions, different medical colleges, dental colleges, and upazila health complexes attended the workshop.
8. Workshop on How to Develop a Research Project, held on 26-30 May 2013 and 09-13 June 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 40 participants from medical university, postgraduate institutions, different medical colleges, dental colleges, and upazila health complexes attended the workshop.
9. Workshop on How to Write a Manuscript, held on 26-30 May 2013 and 16-20 June 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 40 participants from medical university, postgraduate institutions, different medical colleges, dental colleges, and upazila health complexes attended the workshop.
10. Dissemination on Ethical Guidelines for Conducting Research Studies Involving Human Subjects and Seminar on Ethical Guidelines of BMRC, held on 30 September 2013 at BMRC Bhaban, BMRC, Mohakhali, Dhaka. In total, 62 participants from medical university, different medical colleges, dental colleges, postgraduate institutions, and BMRC personnel attended the seminar.

Research grants (80 research protocols)

A. Grant given to Researcher:

1. Equilibration of hemoglobin concentration after transfusion in medical inpatients not actively bleeding
2. Awareness on insulin therapy in the management of diabetes mellitus among junior doctors and nurses in the Medical College Hospital, Dhaka
3. Propranolol versus corticosteroid for infantile haemangioma: a randomized control trail in a tertiary-care hospital
4. To study the prevalence of HBV and HCV among the multi-transfused beta-thalassemic major patients admitted in the daycare centre of blood transfusion department of Mymensingh Medical College Hospital

5. Value of collecting third (3rd) sputum sample for the diagnosis of pulmonary tuberculosis (PTB)
6. Prevalence of anti-HBC total positivity in an impoverished urban community in Dhaka, Bangladesh
7. Comparative study of topiramate versus amitryptiline in the treatment of migraine in Bangladeshi population
8. Point prevalence of irritable bower syndrome in a rural community of Bangladesh and factors asscіated with occurance of it
9. The effectiveness of an education program among postnatal mothers in rural community of Bangladesh
10. Study on disease profile, opinions, and sociodemographic characteristics of rural people attending the community clinics in Sadar Upazila under Sirajganj district
11. A profile of BRCA2 gene Exon8 polymorphism in breast cancer of Bangladeshi females
12. Comparison between x-ray and ultrasonograpic finding in wrist-joint pathology
13. Community-based targeted case finding tuberculosis in household of tuberculosis patients in rural Bangladesh
14. Risk factors for fall in elderly women
15. Physicians knowledge and attitude of opionid availability and accessibility and use in pain management in Bangladesh
16. Palliative care for incurable malignancies: a comparative analysis between standard oncology care and early integration of palliative care with standard oncology care in non-small cell lung cancer patients
17. Assessment of prevalence and risk facotrs of hypertension in a rural community of Bangladesh
18. Human resource management in secondary level and primary healthcare-level government hospitals in Bangladesh
19. Health behavior and determinants of gestational diabetes
20. Poor glycemic control is a risk factor for osteoporosis among diabetic patients—a case-control study
21. Community-based intervention improve maternal and neonatal health outcomes meeting the challenges of MDG 4 and 5
22. Health-related cuality of life ad cognitive functioning of autistic children
23. Hospital-acquired infections among TB and non TB admitted patients in a selected tertiary-level govt. hospital of Dhaka city
24. Portable personal listening devices use and hearing health: adolescents' perceptions and behavior of loud music and hearing conservation
25. State of service delivery and utilization of services in selected community clinics
26. Surveillance of nosocomial infections and daily antibiotic cost at tertiary hospitals in Bangladesh
27. Health-seeking behaviours and knowledge about prevention of malaria among the household heads in a selected malaria endemic zone
28. Impact of smoking on pulmonary tuberculosis among the patients attending selected DOST center in Bangladesh
29. Measuring renal function by creatinine clearance rate (CCR) and formula-based methods to compare with cystatin C equations among type 2 diabetic subjects with nephropathy
30. Factors influencing the electrolyte imbalance of admitted diabetic patients in a tertiary care hospital
31. Effect of a marmelos on sodium-glucose cotransport through intestinal epithelium in rats
32. Awareness on diabetic retinopathy among patients of diabetes mellitus: finding from a tertiary level hospital
33. Type 2 diabetes mellitus and functional status of the kidney
34. Non-alcoholic fatty liver disease in prediabetes and its association with insulin resistance and subclinical inflammation
35. Development of PCR based non invasive diagnostic system for kala-azar from peripheral blood
36. Therapeutic Intervention to control blood pressure, proteinuria and dyslipidemia in Bangladeshi type 2 diabetic subjects with nephropathy
37. Estimation of dietary salt intake by measuring 24-hour urinary sodium excretion in a rural Bangladeshi Population
38. Dhaka urban health and cardiovascular risk assessment (Dhaka) study

39. Utilization of present health service system in UHC and UHFWC in costal area of Bangladesh
40. Role of oxidative stress on male infertility in Bangladeshi population
41. Determination of association of tumor growth factor-B (TGF-B1) gene polymorphisms in Bangladeshi hypertensive and health control subject
42. Reproductive health status of female garments worker in Bangladesh: a study in Dhaka city
43. Antioxidative effects of oral administration of Bangladeshi honey samples on myocardial ischemia-reperfusion in rat heart
44. Effects of artificial fruit ripening chemical on different stages of embryonic development of fetus
45. Disease pattern and health-seeking behavior among the tribal community of Bangladesh
46. Status of undergraduate ophthalmic medical education in Bangladesh
47. Information on risk factors of pulmonary tuberculosis from various sources: access and anticipation among rural community members of Bangladesh
48. School-based approach for child-centered adaptation to protect human health from the effect of climate change
49. Predisposing factors of preiodontitis among diabetic and non-diabetic patients at a selected Hospital of Dhaka city
50. Comparison of periodontal destruction in adult control diabetic and uncontrolled diabetic patients and associated factors
51. Pattern of road traffic accident of the patients admitted in general hospital, Sirajganj
52. A retrospective case-control study of noise exposure leading to hearing loss in the urban community of Bangladesh
53. Management efficiency and clinical quality of services at the upazila health complex: An in-depth analysis
54. Status of the service delivery to the patients attending community clinic
55. Health related quality of life and HIV- related stigma among the people living with HIV/AIDS
56. Community perception and satisfaction regarding the quality of services are important predictors for community clinic utilization
57. Profiling the venom composition of *naja naja* which causes one of the most snake bite fatalities in Bangladesh
58. Study of growth inhibitory effect on EAC cells and apoptosis-inducing activities of microbial metabolites
59. NAT2 gene polymorphism as a biomarker for susceptibility to bladder cancer in Bangladesh population
60. Adenosine 5'-monophosphate (AMP)-activated protein kinase (AMPK) activity in type 2 diabetic subjects
61. Tumor necrosis factor alpha gene G-308A polymorphism, insulin resistance and B-cell secretory defects in Bangladeshi prediabetic and diabetic subjects
62. Polymorphism of leptin and leptin receptor genes and its association with insulin resistance in Bangladeshi prediabetic and diabetic subjects
63. Study on effects of folic acid supplementation on serum homocysteine in coronary heart disease patients
64. Study on the composition of energy drinks available in the Bangladeshi market

B. Grants given to the postgraduate students

1. Competency of public health workforce in Bangladesh
2. Self-efficacy, physical activity and health-related quality of life in meniscectomy patients of Bangladesh Armed Forces
3. Prevalence of malocclusion and orthodontic treatment need in children and adolescents in Bangladesh
4. Carbamazepine versus amitriptyline in the management of painful diabetic polyneuropathy
5. Serum D-Dimer in lacunar stroke
6. Nutritional status, food intake and predictors of malnutrition among under-five tribal children
7. Pathways into homelessness and problems of homeless people in Dhaka city
8. Adherence to treatment among type 2 diabetes mellitus patients
9. Life style of hypertensive patients at Shaheed Suhrawardy Hospital in Dhaka city
10. Satisfaction of Patients on Emergency Medical Service (EMS) in Dhaka Medical College Hospital

11. Sterilization pattern of dental clinics in Rangpur city corporation
12. Emergency Medical Service (EMS) management in Dhaka Medical College Hospital
13. Relationship between signal intensity change in the spinal cord on MRI and motor myelopathic signs in patients with cervical spondylotic myelopathy
14. Xpert MTB/RIF for rapid diagnosis of tuberculous lymphadenitis from fine-needle aspiration biospsy specimens
15. Prevalence of choledocholithiasis, along with cholelithiasis
16. Efficacy of color dopple in differentiation of benign and malignant cervical lymphadenopathy with histiopathological correlation

Publications in BMRC Bulletin during 2013

Issue 39 (1), April, 2013: Original articles

1. Correlation between intracerebral hemorrhage score and surgical outcome of spontaneous intracerebral hemorrhage
2. Comparative study of the effect of ethanolic extract of swietenia mahagoni seeds with rosiglitazone on experimentally induced diabetes mellitus in rats
3. Sustained virological response after treatment in patients with chronic hepatitis C infection—a five-year follow-up
4. Ultrasound guided fine-needle aspiration cytology: a sensitive diagnostic tool for diagnosis of intra-abdominal lesions
5. Leptin to adiponectin ratio in preeclampsia
6. Adverse outcome of methotrexate and mini pulse betamethasone in the treatment of lichen planus
7. Factors responsible for increased percent recirculation in arterio-venous fistula among the haemodialysis patients
8. Risk factors of multidrug-resistant tuberculosis in Bangladeshi population: a case-control study
9. Normal value of pulsatility index of umbilical artery in second and third trimester of pregnancy

Letter-to-the-editor

1. Microsurgical excision of olfactory groove meningioma's: a brief study of outcome of different surgical approaches.

Issue 39 (2), August, 2013: Original articles

1. Single space transforaminal lumbar interbody fusion in spondylolisthesis: initial experience of 30 cases
2. A comparative study of chemical and immunological method of fecal occult blood test in the diagnosis of occult lower gastrointestinal bleeding
3. Disseminated intravascular coagulation in acute promyelocytic leukaemia and its impact on the induction failure: a single-centre-study
4. Photo-anthropometric study on face among *Garo* adult females of Bangladesh
5. Development and evaluation of an in-house ELISA to detect hepatitis B virus surface antigen in resource-limited settings
6. A comparative study between fine-needle aspiration cytology findings and histopathological report of major salivary gland neoplasm in a tertiary hospital of Bangladesh
7. Assessing glomerular filtration rate in healthy adult potential kidney donors in Bangladesh: a comparison of various prediction equations with measured glomerular filtration rate by diethylentriamine pentaacetic acid renogram
8. Role of transvaginal sonography in the detection of endometrial carcinoma
9. Detection and estimation of human papillomavirus viral load in patients with cervical lesions

Letter-to-the-editor

1. Correlation of ultrasonographically determined renal cortical thickness and renal length with estimated glomerular filtration rate in chronic kidney disease patients

Issue 39 (3), December, 2013: Original articles

1. Clinical experience with BIAsp 30: Results from the Bangladesh cohort of the global A1chieve study
2. Percutaneous nephrolithotomy—a versatile technique for both simple and complex renal stone
3. Comparison of transvaginal and transabdominal ultrasonography in the diagnosis of ectopic pregnancy
4. An open randomized controlled trial to compare the efficacy of two fixed dose combinations of artemesinin-based combinations for uncomplicated falciparum malaria in Bangladesh

5. Double balloon enteroscopy: Bangladesh experience
6. Comparison of modified Friedewald's formula with direct measurement of low-density lipoprotein cholesterol in Bangladeshi population
7. Microbial contamination in herbal medicines available in Bangladesh
8. Ocular injury: prevalence in different rural population of Bangladesh
9. Comparison of P2Y12 receptor inhibition by clopidogrel and prasugrel in patients undergoing percutaneous coronary intervention

Letter-to-the-editor

1. Auto-analyzer-based screening of microcytic hypochromic ratio to differentiate thalassaemia and non-thalassemic microcytosis

Ethical clearance

1. A chort study of health effects of arsenic exposure in Bangladesh
2. Chemoprevention of arsenic-induced skin cancer
3. Oral infections and carotid atherosclerosis and stroke study and the HEALS participants
4. Study of the nutrient gap of complementary feeding at middle and low socio-economic level of 6-23 months' children and improve the gaps by dietary intervention
5. Effect of nutrition education on pregnancy weight gain in middle & low socio economical status during 3rd trimester
6. Preparedness of primary healthcare to respond to climate-sensitive infectious disease outbreaks in flood-prone areas of Bangladesh
7. Consequences of arsenic and manganese exposure in adolescents
8. A pilot study of choline and betaine supplementation in arsenic-exposed individuals in Bangladesh
9. Community TB training of providers and its effect on TB case detection in peri-urban area of Bangladesh
10. A pharmacodynamic study of the capacity of selenite to promote arsenic excretion in arsenicosis patients
11. National survey on prevalence of hearing impairment in Bangladesh
12. Introduction of fortified rice in Bangladesh
13. Health-seeking behaviour of the vulnerable community towards sexually transmitted diseases in Bangladesh
14. Climate Refugees: disease burden among children under 5 years in slum communities of Dhaka Bangladesh
15. Assessment of Bangladesh consumer needs and preferences/willingness to pay for improved cookstoves
16. Assessing the effects of the Mayer Hashi Project on the use of long-action and permanent methods (LA/PM) of contraception in selected districts of Bangladesh
17. eHealth user interface pilot pre-/post-assessment study
18. Diabetes risk in rural community (DRIRC) study, narail
19. Final evaluation of CARE's Ekhoni Shomoy Project in Bangladesh
20. Nutritional intervention to the slum primary school (6-10 years) student in Dhaka city
21. Multidrug-resistant tuberculosis (MDR-TB) in community setting of Bangladesh
22. Molecular characterization of *leishmania* isolated from selected human, carnivores and herbivores with clinical leismaniasis
23. Managing urinary incontinence in elderly village women in Bangladesh: a feasibility study for a community exercise-based intervention
24. Pharmacokinetic and bioequivalence study of insulin injection in Bangladeshi volunteers.
25. mCARE: Enhancing neonatal survival in rural South Asia
26. Gene environment multi-phenotype study (GEMS)
27. Piloting post-mortem specimen collection for diagnosing cause of death in a Bangladeshi medical college hospital
28. A cross-sectional study of cell phone assessments of symptoms in patients with advanced cancer
29. DiabCare Asia 2012-Bangladesh:a cross-sectional survey to evaluate diabetes management, control, complications, psychosocial aspects of patients with type 2 diabetes in Bangladesh

30. Factors associated with quitting smoking among TB patients in a smoking cessation intervention programme in Bangladesh
31. Perception, help-seeking behavior and treatment-delay of leprosy-patients
32. Menstrual regulation with medication outside of centers (MRMOOC) in Bangladesh: operational perspectives, safety and effectiveness
33. mTikka: A cloud-based system to improve provider efficiency and vaccine timeliness among infants in rural Bangladesh
34. An educational intervention study on leprosy awareness among close contacts with leprosy patients in endemic areas of Bangladesh
35. Obesity prevalence and patterns of diet and physical activity among children and adolescents in urban areas in Bangladesh
36. Effect of raising taxes on tobacco consumption
37. Knowledge and awareness on childhood tuberculosis among the community healthcare providers (CHCP) working at community clinics in rural Bangladesh
38. Prevalence of extra-pulmonary and Smear negative pulmonary tuberculosis among the patients in different DOS Corner under National Tuberculosis Control Program (NTP) Bangladesh
39. Operationalizing the proposed national protocol for the prevention and management of severe pre-eclampsia and eclampsia patients using loading dose of magnesium sulphate at community level in Bangladesh
40. The 2013 Marketing Innovations for Health Baseline Survey
41. 2013 Bangladesh Urban Health Survey
42. Multidrug-resistant tuberculosis: illness perception of patients during and after treatment
43. Pattern and awareness about smokeless tobacco in a rural area of Bangladesh
44. Risk of disability among leprosy cases in relation with socio-demographic factors
45. Study of lipid profile in adult population of Bangladesh
46. Bangladesh environment and migration survey (BEMS)

International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b)

icddr,b Publications 2013

A. Internal Publication Series

Annual report

1. Annual report 2012. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 2013. 28 p.

Collabarative publications

1. Nutritional micronutrients status survey 2011-12: final report. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh, 2013. 140 p.

Journal and Newsletters

1. Amader Shasthya Research Brief no. 1, 2013
2. Chronic Disease News V. 5, no. 1, 2013
3. FHS Research Brief no. 5-6, 2013
4. Glimpse V. 35, no. 1-3, 2013
5. Health and Science Bulletin v. 11 no. 1-4, 2013
6. Journal of Health, Population and Nutrition v. 31 no. 1-4, 2013 (Supplement: 1-2)
7. News 'n' Views v. 7 no. 1-24, 2013
8. Shasthya Sanglap v. 21, no. 3, Choitro 1419; v. 22, no. 1-2, Srabon 1420 Bangla year

B. Original papers, including review articles and short reports, in journals

1. Adams AM, Ahmed T, Arifeen SE, Evans TG, Huda T, Reichenbach L. Innovation for universal health coverage in Bangladesh: a call to action. Lancet 2013 Dec 21;382(9910):2104-11
2. Adams AM, Rabbani A, Ahmed S, Mahmood SS, Al-Sabir A, Rashid SF, Evans TG. Explaining equity gains in child survival in Bangladesh: scale, speed, and selectivity in health and development. Lancet 2013 Dec 14;382(9909):2027-37
3. Afrad MH, Hassan Z, Farjana S, Moni S, Barua S, Das SK, Faruque AS, Azim T, Rahman M. Changing profile of rotavirus genotypes in Bangladesh, 2006—2012. BMC Infect Dis 2013 Jul 15;13:320
4. Afrad MH, Karmakar PC, Das SK, Matthijnssens J, Ahmed F, Nahar S, Faruque AS, Rahman MZ, Rahman M, Azim T. Epidemiology and genetic diversity of human astrovirus infection among

hospitalized patients with acute diarrhea in Bangladesh from 2010 to 2012. J Clin Virol 2013 Dec;58(4):612-8

5. Afrad MH, Matthijnssens J, Moni S, Kabir F, Ashrafi A, Rahman MZ, Faruque AS, Azim T, Rahman M. Genetic characterization of a rare bovine-like human VP4 mono-reassortant G6P[8] rotavirus strain detected from an infant in Bangladesh. Infect Genet Evol 2013 Oct;19():120–6
6. Afroze F, Pietroni MAC, Chisti MJ. Recurrent sclerema in a young infant presenting with severe sepsis and severe pneumonia: an uncommon but extremely life-threatening condition (case study). J Health Popul Nutr 2013 Dec;31(4):538-42
7. Ahmed ASMNU, Khan NZ, Hussain M, Amin MR, Hanif M, Mahbub M, Arifeen SE, Baqui AH, Qazi SA, Saha SK. Follow-up of cases of haemophilus influenzae type b meningitis to determine its long-term sequelae. J Pediatr 2013 Jul;163(1 Suppl):S44-9.
8. Ahmed AU, Ahmed TU, Uddin MS, Chowdhury MHA, Rahman MH, Hossain MI. Outcome of standardized case management of under-5 children with severe acute malnutrition in three hospitals of Dhaka city in Bangladesh. Bangladesh J Child Health 2013 Apr;37(1):5-13
9. Ahmed D, Islam MS, Begum YA, Janzon A, Qadri F, Sjöling A. Presence of enterotoxigenic *Escherichia coli* in biofilms formed in water containers in poor households coincides with epidemic seasons in Dhaka. J Appl Microbiol 2013 Apr;114(4):1223-9.
10. Ahmed S, Farzana FD, Ferdous F, Chisti MJ, Malek MA, Faruque ASG, Das SK. Urban-rural differentials in using antimicrobials at home among under-5 children with diarrhea. Sci J Clin Med 2013 May;2(3):81-6
11. Ahmed S, Galagan S, Scobie H, Khyang J, Prue CS, Khan WA, Ram M, Alam MS, Haq MZ, Akter J, Glass G, Norris DE, Nyunt MM, Shields T, Sullivan DJ, Sack DA. Malaria hotspots drive hypoendemic transmission in the Chittagong Hill districts of Bangladesh. PLoS ONE 2013 Aug 6;8(8):e69713
12. Ahmed S, Nasrin D, Ferdous F, Farzana FD, Kaur G, Chisti MJ, Das SK, Faruque ASG. Acceptability and compliance to a 10-day regimen of zinc treatment in diarrhea in rural Bangladesh. Food Nutr Sci 2013 Apr;4(4):357-64
13. Ahmed S, Rekha RS, Ahsan KB, Doi M, Grandér M, Roy AK, Ekström E-C, Wagatsuma Y, Vahter M, Raqib R. Arsenic exposure affects plasma insulin-like growth factor 1 (IGF-1) in children in rural Bangladesh. PLoS ONE 2013 Nov 27; 8(11):e81530
14. Ahmed SM, Evans TG, Standing H, Mahmud S. Harnessing pluralism for better health in Bangladesh. Lancet 2013 Nov 23;382(9906):1746-55
15. Ahmed T, Bhuiyan TR, Zaman K, Sinclair D, Qadri F. Vaccines for preventing enterotoxigenic *Escherichia coli* (ETEC) diarrhoea. Cochrane Database Syst Rev 2013 Jul 5;7:CD009029
16. Ahmed T, Hossain M, Sanin KI. Global burden of maternal and child undernutrition and micronutrient deficiencies. Ann Nutr Metab 2012;61 (Suppl 1):8-17.
17. Akanda AS, Jutla AS, Gute DM, Sack RB, Alam M, Huq A, Colwell RR, Islam S. Population vulnerability to biannual cholera outbreaks and associated macro-scale drivers in the Bengal Delta. Am J Trop Med Hyg 2013 Nov;89(5):950–9
18. Akhter D, Das SK, Chisti MJ, Imran G, Farzana FD, Ahmed S, Ferdous F, Malek MA, Faruque ASG. Health and nutritional status of young foster children attending a diarrhea treatment hospital in Bangladesh. Food Nutr Sci 2013 Aug;4(8):785-90
19. Akhter N, Sondhya FY. Nutritional status of adolescents in Bangladesh: Comparison of severe thinness status of a low-income family's adolescents between urban and rural Bangladesh. J Edu Health Promot 2013 Feb;2:27
20. Akkerman OW, van der Werf TS, de Boer M, de Beer JL, Rahim Z, Rossen JWA, van Soolingen D, Kerstjens HAM, van der Zanden AGM. Comparison of 14 molecular assays for detection of *Mycobacterium tuberculosis* complex in bronchoalveolar lavage fluid. J Clin Microbiol 2013 Nov;51(11):3505-11
21. Alam A, Bracken H, Johnston HB, Raghavan S, Islam N, Winikoff B, Reichenbach L. Acceptability and feasibility of medication menstrual regulation in Bangladesh. Int Perspect Sex Reprod Health 2013 Jun;39(2):79-87
22. Alam DS, Jha P, Ramasundarahettige C, Streatfield PK, Niessen LW, Chowdhury MA, Siddiquee AT, Ahmed S, Evans TG. Smoking-attributable mortality in Bangladesh: proportional mortality study. Bull World Health Organ 2013 Oct 1;91(10):757-64

23. Alam MM, Arifuzzaman M, Ahmad SM, Hosen MI, Rahman MA, Rashu R, Sheikh A, Ryan ET, Calderwood SB, Qadri F. Study of avidity of antigen-specific antibody as a means of understanding development of long-term immunological memory after *Vibrio cholerae* O1 infection. Clin Vaccine Immunol 2013 Jan;20(1):17-23

24. Alam MM, Leung DT, Akhtar M, Nazim M, Akter S, Uddin T, Khanam F, Mahbuba DA, Ahmad SM, Bhuiyan TR, Calderwood SB, Ryan ET, Qadri F. Antibody avidity in humoral immune responses in Bangladeshi children and adults following administration of an oral killed cholera vaccine. Clin Vaccine Immunol 2013 Oct;20(10):1541-8

25. Alam MM, Tsai LL, Rollins SM, Sheikh A, Khanam F, Bufano MK, Yu Y, Wu-Freeman Y, Kalsy A, Sultana T, Sayeed MA, Jahan N, LaRocque RC, Harris JB, Leung DT, Brooks WA, Calderwood SB, Charles RC, Qadri F, Ryan ET. Identification of *In vivo-induced* bacterial proteins during human infection with *Salmonella enterica* serotype Paratyphi A. Clin Vacc Immunol 2013 May;20(5):712-9

26. Alam N, Chowdhury ME, Mridha MK, Ahmed A, Reichenbach LJ, Streatfield PK, Azim T. Factors associated with condom use negotiation by female sex workers in Bangladesh. Int J STD AIDS 2013 Oct;24(10):813–21

27. Alam S, Khanum H, Zaman RF, Haque R. Prevalence of different protozoan parasites in patients visiting at ICDDR,B Hospital, Dhaka. J Asiat Soc Bangladesh Sci 2013 Jun;39 (1):117-23

28. Ali M, Kim DR, Yunus M, Emch M. Time series analysis of cholera in Matlab, Bangladesh, during 1988-2001. J Health Popul Nutr 2013 Mar;31 (1):11-9

29. Al-Mamun A, Mily A, Sarker P, Tiash S, Navarro A, Akter M, Talukder KA, Islam MF, Agerberth B, Gudmundsson GH, Cravioto A, Raqib R. Treatment with phenylbutyrate in a pre-clinical trial reduces diarrhea due to enteropathogenic *Escherichia coli*: link to cathelicidin induction. Microbes Infect 2013 Nov;15(13):939-50

30. Ana J, Koehlmoos T, Smith R, Yan LL. Research misconduct in low- and middle-income countries. PLoS Med 2013 Mar 26;10(3):e1001315

31. Anthony SJ, Epstein JH, Murray KA, Navarrete-Macias I, Zambrana-Torrelio CM, Solovyov A, Ojeda-Flores R, Arrigo NC, Islam A, Khan SA, Hosseini P, Bogich TL, Olival KJ, Sanchez-Leon MD, Karesh WB, Goldstein T, Luby SP, Morse SS, Mazet JAK, Daszak P, Lipkin WI. A strategy to estimate unknown viral diversity in mammals. mBio 2013 Sep 3;4(5):e00598-13

32. Argos M, Rahman M, Parvez F, Dignam J, Islam T, Quasem I, K Hore S, T Haider A, Hossain Z, I Patwary T, Rakibuz-Zaman M, Sarwar G, La Porte P, Harjes J, Anton K, Kibriya MG, Jasmine F, Khan R, Kamal M, Shea CR, Yunus M, Baron JA, Ahsan H. Baseline comorbidities in a skin cancer prevention trial in Bangladesh. Eur J Clin Invest 2013 Jun;43(6):579-88

33. Arifeen SE, Christou A, Reichenbach L, Osman FA, Azad K, Islam KS, Ahmed F, Perry HB, Peters DH. Community-based approaches and partnerships: innovations in health-service delivery in Bangladesh. Lancet 2013 Dec 14;382(9909):2012-26

34. Arnold BF, Null C, Luby SP, Unicomb L, Stewart CP, Dewey KG, Ahmed T, Ashraf S, Christensen G, Clasen T, Dentz HN, Fernald LC, Haque R, Hubbard AE, Kariger P, Leontsini E, Lin A, Njenga SM, Pickering AJ, Ram PK, Tofail F, Winch PJ, Colford JM, Jr. Cluster-randomised controlled trials of individual and combined water, sanitation, hygiene and nutritional interventions in rural Bangladesh and Kenya: the WASH Benefits study design and rationale. BMJ Open 2013 Aug 30;3(8):e003476.

35. Arsenault HE, Yakes EA, Islam MM, Hossain MB, Ahmed T, Hotz C, Lewis B, Rahman AS, Jamil KM, Brown KH. Very low adequacy of micronutrient intakes by young children and women in rural Bangladesh is primarily explained by low food intake and limited diversity. J Nutr 2013 Feb 1;143(2):197-203

36. Ashenafi S, Aderaye G, Zewdie M, Raqib R, Bekele A, Magalhaes I, Lema B, Habtamu M, Rekha RS, Aseffa G, Maeurer M, Aseffa A, Svensson M, Andersson J, Brighenti S. BCG-specific IgG-secreting peripheral plasmablasts as a potential biomarker of active tuberculosis in HIV-negative and HIV-positive patients. Thorax 2013 Mar;68 (3): 269-76

37. Ashraf S, Huque MH, Kenah E, Agboatwalla M, Luby SP. Effect of recent diarrhoeal episodes on risk of pneumonia in children under the age of 5 years in Karachi, Pakistan. Int J Epidemiol 2013 Feb;42(1):194-200

38. Azhar BS, Monirujjaman M, Islam KS, Afrin S, Hossain MS. Sex, conception interval, gestational age, apgar score, and anthropometric surrogates

in relation to birthweight of Bangladeshi newborns: a cross-sectional study. ISRN Public Health 2013:405725

39. Balabanova D, Mills A, Conteh L, Akkazieva B, Banteyerga H, Dash U, Gilson L, Harmer A, Ibraimova A, Islam Z, Kidanu A, Koehlmoos TP, Limwattananon S, Muraleedharan VR, Murzalieva G, Palafox B, Panichkriangkrai W, Patcharanarumol W, Penn-Kekana L, Powell-Jackson T, Tangcharoensathien V, McKee M. good health at low cost 25 years on: lessons for the future of health systems strengthening. Lancet 2013 Jun 15;381(9883): 2118-33.

40. Banu S, Rahman MT, Uddin MKM, Khatun R, Ahmed T, Md. Mojibur Rahman MM, Husain MA, van Leth F. Epidemiology of tuberculosis in an urban slum of Dhaka city, Bangladesh. PLoS ONE 2013 Oct 21;8(10):e77721

41. Baqui AH, Rosen HE, Lee AC, Applegate JA, El Arifeen S, Rahman SM, Begum N, Shah R, Darmstadt GL, Black RE. Preterm birth and neonatal mortality in a rural Bangladeshi cohort: implications for health programs. J Perinatol 2013 Dec;33(12):977-81

42. Bari SMN, Roky MK, Mohiuddin M, Kamruzzaman M, Mekalanos JJ, Faruque SM. Quorum-sensing autoinducers resuscitate dormant Vibrio cholerae in environmental water samples. Proc Natl Acad Sci USA 2013 Jun 11;110(24):9926–31 Bartlett E, Parr J, Lindeboom W, Khanam MA, Koehlmoos TP. Sources and prevalence of self-reported asthma diagnoses in adults in urban and rural settings of Bangladesh. Glob Public Health 2013 May;8(1):79-89

43. Bhattacharya SK, Sur D, Ali M, Kanungo S, You YA, Manna B, Sah B, Niyogi SK, Park JK, Sarkar B, Puri MK, Kim DR, Deen JL, Holmgren J, Carbis R, Dhingra MS, Donner A, Nair GB, Lopez AL, Wierzba TF, Clemens JD. 5-year efficacy of a bivalent killed whole-cell oral cholera vaccine in Kolkata, India: a cluster-randomised, double-blind, placebo-controlled trial. Lancet Infect Dis 2013 Dec;13(12):1050–6

44. Bhuiyan MU, Zaman S, Ahmed T. Risk factors associated with overweight and obesity among urban school children and adolescents in Bangladesh: a case-control study. BMC Pediatrics 2013 May 8;13:72

45. Bhutta ZA, Das JK, Rizvi A, Gaffey MF, Walker N, Horton S, Webb P Lartey A, Black RE, The Lancet Nutrition Interventions Review Group (Bhutta ZA, Rizvi A, Das JK, Salam RA, Yousafzai A, Lassi ZS, Lenters L, McPhail C, Wazny K, Gaffey MF, Zlotkin S, Imdad A, Haider BA, Welch V, Martorell R, Black RE, Walker N, Tam Y, Ahmad T), and the Maternal and Child Nutrition Study Group (Black RE, Victora C, Walker S, Alderman H, Bhutta ZA, Gillespie S, Haddad L, Horton S, Lartey A, Mannar V, Ruel M, Webb P). Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? Lancet 2013 Aug 3;382(9890):452-77

46. Bonhoeffer J, Imoukhuede B, Aldrovandi G, Bachtiar NS, Chan ES, Chang S, Chen RT, Fernandopulle R, Goldenthal KL, Heffelfinger JD, Hossain S, Jevaji I, Khamesipour A, Kochhar S, Makhene M, Malkin E, Nalin D, Prevots R, Ramasamy R, Sellers S, Vekemans J, Walker B, Wilson P, Wong V, Zaman K, Heininger U; for the Brighton Collaboration Clinical Trial Protocol Working Group. Template protocol for clinical trials investigating vaccines-Focus on safety elements. Vaccine 2013 Nov 12;31(47):5602-20

47. Bontell I, Sarker MS, Rahman M, Afrad MH, Sönnerborg A, Azim T. Molecular dating of HIV-1 subtype C from Bangladesh. PLoS ONE 2013 Nov 1;8(11):e79193.

48. Bowen A, Agboatwalla M, Ayers T, Tobery T, Tariq M, Luby SP. Sustained improvements in handwashing indicators more than 5 years after a cluster-randomised, community-based trial of handwashing promotion in Karachi, Pakistan. Trop Med Int Health 2013 Mar;18(3):259-67

49. Bruins M, Rahim Z, Bos A, van de Sande WWJ, Endtz HP, van Belkum A. Diagnosis of active tuberculosis by e-nose analysis of exhaled air. Tuberculosis 2013 Mar;93(2):232-8.

50. Burford BJ, Welch V, Waters E, Tugwell P, Moher D, O'Neill J, Koehlmoos T, Petticrew M. Testing the PRISMA-equity 2012 reporting guideline: the perspectives of systematic review authors. PLoS ONE 2013 Oct 10;8(10):e75122

51. Campbell H, Arifeen SE, Hazir T, O'Kelly J, Bryce J, Rudan I, Qazi SA. Measuring coverage in MNCH: challenges in monitoring the proportion of young children with pneumonia who receive antibiotic treatment. PLoS Med 2013 May 7;10(5): e1001421

52. Cash RA, Halder SR, Husain M, Islam MS, Mallick FH, May MA, Rahman M, Rahman MA. Reducing the health effect of natural hazards in Bangladesh. Lancet 2013 Dec 21;382(9910):2094-103

53. Chakraborty S, Alam M, Scobie HM, Sack DA. Adaptation of a simple dipstick test for detection of *Vibrio cholerae* O1 and O139 in environmental water. Front Microbiol 2013 Oct 29;4:320

54. Chan GJ, Baqui AH, Modak JK, Murillo-Chaves A, Mahmud AA, Boyd TK, Black RE, Saha SK. Early-onset neonatal sepsis in Dhaka, Bangladesh: risk associated with maternal bacterial colonisation and chorioamnionitis. Trop Med Int Health 2013 Sep; 18(9):1057–64

55. Chan GJ, Modak JK, Mahmud AA, Baqui AH, Black RE, Saha SK. Maternal and neonatal colonization in Bangladesh: prevalences, etiologies and risk factors. J Perinatol 2013 Dec;33(12):971-6

56. Charles RC, Sultana T, Alam MM, Yu Y, Wu-Freeman Y, Bufano MK, Rollins SM, Tsai L, Harris JB, LaRocque RC, Leung DT, Brooks WA, Nga TVT, Dongol S, Basnyat B, Calderwood SB, Farrar J, Khanam F, Gunn JS, Qadri F, Baker S, Ryan ET. Identification of immunogenic *Salmonella enterica* Serotype Typhi antigens expressed in chronic biliary carriers of S. Typhi in Kathmandu, Nepal. PLoS Negl Trop Dis 2013 Aug 1;7(8):e2335

57. Chisti MJ, Ahmed T, Pietroni MAC, Faruque ASG, Ashraf H, Bardhan PK, Hossain MI, Das SK, Salam MA. Pulmonary tuberculosis in severely-malnourished or HIV-infected children with pneumonia: a review. J Health Popul Nutr 2013 Sep;31(3):308-13

58. Chisti MJ, Parvin I, Ashraf H, Saha H, Matin FB, Pietroni MAC. Interstitial lung disease and profound hypoxaemia in a severely-malnourished child with very severe pneumonia and potential lymph-node tuberculosis: an uncommon but serious co-morbidity (case study). J Health Popul Nutr 2013 Mar;31(1):133-7

59. Chisti MJ, Salam MA, Ashraf H, Faruque ASG, Bardhan PK, Das SK, Shahunja KM, Shahid ASMSB, Ahmed T. Clinical signs of radiologic pneumonia in under-five hypokalemic diarrheal children admitted to an urban hospital in Bangladesh. PLoS ONE 2013 Aug 12;8(8):e71911.

60. Chisti MJ, Salam MA, Ashraf H, Faruque ASG, Bardhan PK, Hossain MI, Shahid ASMSB, Shahunja KM, Das SK, Imran G, Ahmed T. Clinical risk factors of death from pneumonia in children with severe acute malnutrition in an urban critical care ward of Bangladesh. PLoS ONE 2013 Sep 9;8(9):e73728

61. Chisti MJ, Salam MA, Ashraf H, Faruque ASG, Bardhan PK, Shahid ASMSB, Shahunja KM, Das SK, Ahmed T. Predictors and outcome of hypoxemia in severely malnourished children under five with pneumonia: a case-control design. PLoS ONE 2013 Jan 8;8(1):e51376

62. Chisti MJ, Salam MA, Faruque ASG, Ashraf H, Bardhan PK, Das SK, Huq S, Chowdhury F, Islam SB, Ahmed T. History of vitamin a supplementation reduces severity of diarrhea in young children admitted to hospital with diarrhea and pneumonia. Food Nutr Sci 2013 Feb;4(2):150-5

63. Chisti MJ, Salam MA, Hossain MI, Ashraf H, Faruque ASG, Bardhan PK, Shahid ASMSB, Shahunja KM, Das SK, Ahmed T. Fatal outcome-related risks in severely malnourished children with pneumonia in an urban critical care ward of Bangladesh. Bangladesh Crit Care J 2013 Sep;1 (2):80-5

64. Chomvarin C, Johura FT, Mannan SB, Jumroenjit W, Kanoktippornchai B, Tangkanakul W, Tantisuwichwong N, Huttayananont S, Watanabe H, Hasan NA, Huq A, Cravioto A, Colwell R, Alam M. Drug response and genetic properties of *Vibrio cholerae* associated with endemic cholera in Northeastern Thailand, 2003-2011. J Med Microbiol 2013 Apr;62(Pt 4):599-609

65. Chowdhury AMR, Bhuiya A, Chowdhury ME, Rasheed S, Hussain Z, Chen LC. The Bangladesh paradox: exceptional health achievement despite economic poverty. Lancet 2013 Nov 23;382(9906):1734-45

66. Christian P, Lee SE, Angel MD, Adair LS, Arifeen SE, Ashorn P, Barros FC, Fall CHD, Fawzi WW, Hao E, Hu G, Humphrey JH, Huybregts L, Joglekar CV, Kariuki SK, Kolsteren P, Krishnaveni GV, Liu E, Martorell R, Osrin D, Persson L-A, Ramakrishnan U, Richter L, Roberfroid D, Sania A, Kuile FOT, Tielsch J, Victora CG, Yajnik CS, Yan H, Zeng L, Black RE. Risk of childhood undernutrition related to small-for-gestational age and preterm birth in low- and middle-income countries. Int J Epidemiol 2013 Oct;42(5):1340-55

67. Coffey PS, Metzler M, Islam Z, Koehlmoos TP. Willingness to pay for a 4% chlorhexidine (7.1% chlorhexidine digluconate) product for umbilical cord care in rural Bangladesh: a contingency valuation study. BMC Int Health Hum Rights 2013 Oct 18:13:44

68. Colbourn T, Lewycka S, Nambiar B, Anwar I, Phoya A, Mhango C. Maternal mortality in Malawi, 1977–2012. BMJ Open 2013 Dec 18;3(2):e004150

69. Colombara DV, Cowgill KD, Faruque ASG. Risk factors for severe cholera among children under five in rural and urban Bangladesh, 2000–2008: a hospital-based surveillance study. PLoS ONE 2013 Jan 18;8(1):e54395

70. Das SK, Ahmed S, Ferdous F, Farzana FD, Chisti MJ, Latham JR, Talukder KA, Rahman M, Begum YA, Qadri F, Faruque AS, Ahmed T. Etiological diversity of diarrhoeal disease in Bangladesh. J Infect Dev Ctries 2013 Dec 15;7(12):900-9

71. Das SK, Ahmed S, Ferdous F, Farzana FD, Chisti MJ, Leung DT, Malek MA, Talukder KA, Bardhan PK, Salam MA, Faruque ASG, Raqib R. Changing emergence of *Shigella* sero-groups in Bangladesh: observation from four different diarrheal disease hospitals. PLoS ONE 2013 Apr 29; 8(4): e62029.

72. Das SK, Klontz EH, Azmi IJ, Ud-Din AIMS, Chisti MJ, Afrad MH, Malek MA, Ahmed S, Das J, Talukder KA, Salam MA, Bardhan PK, Faruque ASG Klontz KC. Characteristics of multidrug-resistant *Shigella* and *Vibrio cholerae* O1 infections in patients treated at an urban and a rural hospital in Bangladesh. ISRN Microbiol 2013 Dec 22;2013:213915

73. Das SK, Ahmed S, Ferdous F, Farzana FD, Kaur G, Chisti MJ, Talukder KA, Rahman M, Nahar S, Begum YA, Qadri F, Ahmed T, Faruque ASG. Disease severity and common etiology of diarrhea among children under-five in Mirzapur, rural Bangladesh. Int J Trop Dis Health 2013 Mar 17;3(2):82-93

74. Das SK, Chisti MJ, Ahmed S, Malek MA, Farzana FD, Ferdous F, Latham J, Faruque ASG. Prolonged acute diarrhea in adults: decades of observation from epidemiological perspective in urban Bangladesh. Open J Gastroenterol 2013 Jul;3(3):208-13

75. Das SK, Chisti MJ, Huq S, Malek MA, Salam MA, Ahmed T, Faruque ASG. Etiology of diarrhea among severely malnourished infants and young children: observation of urban-rural differences over one decade in Bangladesh. Food Nutr Sci 2013 Mar;4(3):233-9

76. Das SK, Chisti MJ, Huq S, Malek MA, Vanderlee L, Kaur G, Salam MA, Ahmed T Faruque ASG, Mamun AA. Clinical characteristics, etiology and antimicrobial susceptibility among overweight and obese individuals with diarrhea: observed at a large diarrheal disease hospital, Bangladesh. PLoS ONE 2013 Aug 1;8(8):e70402

77. Das SK, Chisti MJ, Huq S, Malek MA, Vanderlee L, Salam MA, Ahmed T, Faruque ASG, Mamun AA. Changing trend of overweight and obesity and their associated factors in an urban population of Bangladesh. Food Nutr Sci 2013Jun;4(6):678-89

78. Das SK, Chisti MJ, Malek MA, Ahmed S, Farzana FD, Ferdous F, Shahunja KM, Salam MA, Ahmed T, Faruque ASG. Socio-demographic, host and clinical characteristics of people with typhoidal and non-typhiodal *Salmonella* gastroenteritis in urban Bangladesh. J Biomed Sci Eng 2013 Aug;6(8):834-42

79. Das SK, Chisti MJ, Malek MA, Salam MA, Ahmed T, Faruque ASG, Mondal D. Comparison of clinical and laboratory characteristics of intestinal amebiasis with shigellosis among patients visiting a large urban diarrheal disease hospital in Bangladesh. Am J Trop Med Hyg 2013 Aug;89(2):339-44

80. Das SK, Nasrin D, Ahmed S, Wu Y, Ferdous F, Farzana FD, Khan SH, Malek MA, Arifeen SE, Levine MM, Kotloff KL, Faruque ASG. Healthcare-seeking behavior for childhood diarrhea in Mirzapur, rural Bangladesh. Am J Trop Med Hyg 2013 Jul;89(1 Suppl):62-8

81. DaVanzo J, Rahman M, Ahmed S, Razzaque A. Influences on pregnancy-termination decisions in Matlab, Bangladesh. Demography 2013 Oct;50(5):1739-64.

82. de Barra M, DeBruine LM, Jones BC, Mahmud ZH, Curtis VA. Illness in childhood predicts face preferences in adulthood. Evol Hum Behav 2013 Nov;34(6):384–9

83. Dey SK, Chisti MJ, Das SK, Shaha CK, Ferdous F, Farzana FD, Ahmed S, Malek MA, Faruque ASG, Ahmed T, Salam MA. Characteristics of diarrheal illnesses in non-breastfed infants attending a large urban diarrheal disease hospital in Bangladesh. PLoS ONE 2013 Mar 8;8(3):e58228

84. Dreibelbis R, Winch PJ, Leontsini E, Hulland KR, Ram PK, Unicomb L, Luby SP. The integrated behavioural model for water, sanitation, and hygiene: a systematic review of behavioural models and a framework for designing and evaluating behaviour change interventions in infrastructure-restricted settings. BMC Public Health 2013 Oct 26;13(1):1015

85. Elahi R, Mohon AN, Khan WA, Haque R, Alam MS. Performance of a HRP-2/pLDH based rapid diagnostic test at the Bangladesh-India-Myanmar border areas for diagnosis of clinical malaria. Malaria J 2013 Oct 30:12:378

86. Engström KS, Hossain MB, Lauss M, Ahmed S, Raqib R, Vahter M, Broberg K. Efficient arsenic metabolism—The AS3MT haplotype is associated with dna methylation and expression of multiple genes around AS3MT. PLoS ONE 2013 Jan 14;8(1):e53732

87. Escamilla V, Knappett PSK, Yunus M, Streatfield PK, Emch M. Influence of latrine proximity and type on tubewell water quality and diarrheal disease in Bangladesh. Ann Assoc Am Geogr 2013;103(2):299-308

88. Fakruddin M, Chowdhury A, Hossain MN, Mannan KSB. Scientific freedom & limits—clinical research perspective. Bangladesh J Bioeth 2013;4(1):30-4

89. Fakruddin M, Mannan KS, Chowdhury A, Mazumdar RM, Hossain MN, Islam S, Chowdhury MA. Nucleic acid amplification: alternative methods of polymerase chain reaction. J Pharm Bioallied Sci 2013 Oct-Dec;5(4):245-52

90. Fakruddin M, Mannan KSB, Andrews S. Viable but nonculturable bacteria: food safety and public health perspective. ISRN Microbiol 2013 Sep 26;2013:703813

91. Fakruddin M, Mannan KSB, Chowdhury A, Mazumdar RM, Hossain MN, Afro H. Research involving human subjects ethical perspective. Bangladesh J Bioeth 2013; 4(2):41-48

92. Fakruddin M, Mannan KSB, Mazumdar RM, Chowdhury A, Hossain MN. Identification and characterization of microorganisms: DNA-fingerprinting methods. Songklanakarin J Sci Technol 2013 Jul-Aug;35(4):397-404

93. Fakruddin M, Mannan KSB. Methods for analyzing diversity of microbial communities in natural environments. Ceylon J Sci (Bio Sci) 2013;2(1):19-33

94. Farag TH, Faruque AS, Wu Y, Das SK, Hossain A, Ahmed S, Ahmed D, Nasrin D, Kotloff KL, Panchilangam S, Nataro JP, Cohen D, Blackwelder WC, Levine MM. Housefly population density correlates with shigellosis among children in Mirzapur, Bangladesh: a time series analysis. PLoS Negl Trop Dis 2013 Jun 20;7(6):e2280

95. Farzana FD, Ahmed S, Ferdous F, Vanderlee L, Khan SH, Roy AK, Chisti MJ, Faruque ASG, Das SK. Biochemical and dietary indicators among vegetarians and non-vegetarians: findings from a cross sectional study in rural Bangladesh. Int J Nutr Food Sci 2013 May;2(3):130-6

96. Fasanella A, Garofolo G, Hossain MJ, Shamsuddin M, Blackburn JK, Hugh-Jones M. Bangladesh anthrax outbreaks are probably caused by contaminated livestock feed. Epidemiol Infect 2013 May;141(5):1021-8.

97. Feenstra SG, Nahar Q, Pahan D, Oskam L, Richardus JH. A qualitative exploration of social contact patterns relevant to airborne infectious diseases in northwest Bangladesh. J Health Popul Nutr 2013 Dec;31(4):424-34

98. Feenstra SG, Nahar Q, Pahan D, Oskam L, Richardus JH. Social contact patterns and leprosy disease: a case-control study in Bangladesh. Epidmiol Infect 2013 Mar;41(3):573-81

99. Ferdous F, Das SK, Ahmed S, Farzana FD, Kaur G, Chisti MJ, Faruque ASG. The impact of socio-economic conditions and clinical characteristics on improving childhood care-seeking behaviors for families living far from the health facility. Sci J Public Health 2013 May;1(2):69-76

100. Ferdous F, Das SK, Ahmed S, Farzana FD, Latham JR, Chisti MJ, Ud-Din AIMS, Azmi IJ, Talukder KA, Faruque ASG. Severity of diarrhea and malnutrition among under five-year-old children in rural Bangladesh. Am J Trop Med Hyg 2013 Aug;89(2):223-8

101. Foysal MJ, Rahman MM, Rabbee MF, Hossain MN, Mahmud R, Rahman MJ, Miah MF, Islam K. Identification and assay of putative virulence properties of *Eschericha coli* gyrase subunit A and B among hospitalized UTI patients in Bangladesh. Inov Pharm Pharmacother 2013;1(1):54-9

102. Frith AL, Naved RT, Persson LA, Frongillo EA. Early prenatal food supplementation ameliorates the negative association of maternal stress with birth size in a randomised trial. Matern Child Nutr. 2013 Apr 5.

103. Fulford AJC, Moore SE, Arifeen SE, Persson, LĹ, Neufeld LM, Wagatsuma Y, Prentice AM. Disproportionate early fetal growth predicts postnatal thymic size in humans. J Dev Orig Health Dis 2013 Jun:4(3):223-31

104. Gardner RM, Kippler M, Tofail F, Bottai M, Hamadani J, Grandér M, Nermell B, Palm B, Rasmussen KM, Vahter M. Environmental exposure to metals and children's growth to age 5 years: a prospective cohort study. Am J Epidemiol 2013 Jun;177(12):1356–67

105. Gazi R, Kabir H, Saha NC, Jahan M. Changes in married men's reproductive health knowledge and utilization of care in the demand-based reproductive health project in Bangladesh. Int J Public Health Human Right 2013 Dec 28;3(1):21-6

106. Gazi R, Kabi H, Saha NC, Khan J. Production cost estimation of child healthcare services in Bangladesh. Int J Bus Manag Soc Sci 2013 Sep;3(1):61-4

107. Gessner BD, Brooksa WA, Neuzil KM, Vernet G, Bright RA, Tam JS, Bresee J, Monto AS. Vaccines as a tool to estimate the burden of severe influenza in children of low-resourced areas (November 30-December 1, 2012, Les Pensieres, Veyrier-du-Lac, France). Vaccine 2013 Jul 11;31(32):3222-8

108. Guevara CP, Wilson B Luiz WB, Sierra A, Cruz1 C, Qadri F, Kaushik RS, Luis C. S. Ferreira LCS, Gomez-Duarte OG. Enterotoxigenic *Escherichia coli* (ETEC) CS21 pilus contributes to adhesion to intestinal cells and to pathogenesis under *in vivo* conditions. Microbiology 2013 Aug; 159(Pt 8):1725-35

109. Gurley ES, Homaira N, Salje H, Ram PK, Haque R, Petri W, Bresee J, Moss WJ, Breysse P, Luby SP, Azziz-Baumgartner E. Indoor exposure to particulate matter and the incidence of acute lower respiratory infections among children: a birth cohort study in urban Bangladesh. Indoor Air 2013 Oct;23(5):379-86

110. Gurley ES, Islam MS, Nahar N, Sultana R, Hossain MJ, Homaira N, Parveen S, Naushin T, Mahbub-ul Alam, Khan AKMD, Chowdhury NMRA, Southern D, Luby SP. Behaviour change intervention to reduce caregivers' exposure to patients' oral and nasal secretions in Bangladesh. Int J Infect Control 2013;9(2):i1-9

111. Gurley ES, Salje H, Homaira N, Ram PK, Haque R, Petri WA Jr, Bresee J, Moss WJ, Luby SP, Breysse P, Azziz-Baumgartner E. Seasonal concentrations and determinants of indoor particulate matter in a low-income community in Dhaka, Bangladesh. Environ Res 2013 Feb;121:11-6.

112. Halder AK, Molyneaux JW, Luby SP, Ram PK. Impact of duration of structured observations on measurement of handwashing behavior at critical times. BMC Public Health 2013 Aug 2;13(1):705

113. Hamadani JD, Tofail F, Cole T, Grantham-McGregor S. The relation between age of attainment of motor milestones and future cognitive and motor development in Bangladeshi children. Matern Child Nutr 2013 Jan;9 (Suppl 1):89-104.

114. Haque F, Hossain MJ, Kundu SK, Naser AM, Rahman M, Luby SP. Cholera outbreaks in urban Bangladesh in 2011. Epidemiol 2013 Jul 2;3:126.

115. Haque F, Kundu SK, Islam MS, Hasan SMM, Khatun A, Gope PS, Mahmud ZH, Alamgir ASM, Islam MS, Rahman M, Luby SP Outbreak of mass sociogenic illness in a school feeding program in northwest Bangladesh, 2010. PLoS ONE 2013 Nov 14;8(11):e80420

116. Hasan NA, Ceccarelli D, Grim CJ, Taviani E, Choi J, Sadique A, Alam M, Siddique AK, Sack RB, Huq A, Colwell RR. Distribution of virulence genes in clinical and environmental *Vibrio cholerae* in Bangladesh. Appl Envir Microbiol 2013 Sep;79(8):5782-5

117. Hashizume M, Chaves LF, Faruque ASG, Yunus M, Streatfield K, Moji K. A differential effect of Indian Ocean dipole and El Ninő on cholera dynamics in Bangladesh. PLoS ONE 2013 Mar 29;8(3):e60001

118. Hawkesworth S, Wagatsuma Y, Kahn AI, Hawlader MDH, Fulford AJC, Arifeen S-E, Persson L-Ĺ, Moore SE. Combined food and micronutrient supplements during pregnancy have limited impact on child blood pressure and kidney function in rural Bangladesh. J Nutr 2013 May 1;143(5):728-34

119. Hawkesworth S, Wagatsuma Y, Kippler M, Fulford AJ, Arifeen SE, Persson LA, Moore SE, Vahter M. Early exposure to toxic metals has a limited effect on blood pressure or kidney function in later childhood, rural Bangladesh. Int J Epidemiol 2013 Feb;42(1):176-85

120. Hawlader MDH, Noguchi E, Arifeen SE, Persson LĹ, Moore SE, Raqib R, Wagatsuma Y. Nutritional status and childhood wheezing in rural Bangladesh. Public Health Nutr 2013 May 17:1-8.

121. Hayford KT, Shomik MS, Al-Emran HM, Moss WL, Bishai D, Levine OS. Measles vaccination coverage estimates from surveys, clinic records,

and immune markers in oral fluid and blood: a population-based cross-sectional study. BMC Public Health 2013 Dec 20:13:1211

122. Hayford KT, Al-Emran HM, Moss WJ, Shomik MS, Bishai D, Levin OS. Validation of an anti-measles virus-specific IgG assay with oral fluid samples for immunization surveillance in Bangladesh. J Virol Methods 2013 Nov;193(2):512-8

123. Hayman DTS, Gurley ES, Pulliam JRC, Field HE. The application of one health approaches to henipavirus research. Curr Top Microbiol Immunol 2013;365:155-70

124. Haynes AK, Manangan AP, Iwane MK, Sturm-Ramirez K, Homaira N, Brooks WA, Luby S, Rahman M, Klena JD, Zhang Y, Yu H, Zhan F, Dueger E, Mansour AM, Azazzy N, McCracken JP, Bryan JP, Lopez MR, Burton DC, Bigogo G, Breiman RF, Feikin DR, Njenga K, Montgomery J, Cohen AL. Moyes J, Pretorius M, Cohen C, Venter M, Chittaganpitch M, Thamthitiwat S, Sawatwong P, Baggett HC, Luber G, Gerber SI. Respiratory syncytial virus circulation in seven countries with global disease detection regional centers. J Infect Dis 2013 Dec;208 (Suppl 3):S246-54

125. Hazir T, Begum K, Arifeen SE, Khan AM, Huque MH, Kazmi N, Roy S, Abbasi S, Rahman QSU, Theodoratou E, Khorshed MS, Rahman KM, Bari S, Kaiser MMI, Saha SK, Ahmed ASMNU, Rudan I, Bryce J, Qazi SA, Campbell H. Measuring coverage in MNCH: a prospective validation study in Pakistan and Bangladesh on measuring correct treatment of childhood pneumonia. PLoS Med 2013 May 7;10(5):e1001422

126. Henkle E, Steinhoff MC, Omer SB, Roy E, Arifeen SE, Raqib R, Breiman RF, Caulfield LE, Moss WJ, Zaman K. The effect of exclusive breast-feeding on respiratory illness in young infants in a maternal immunization trial in Bangladesh. Pediatr Infect Dis J 2013 May;32(5):431-5

127. Hoque DME, Arifeen SE, Rahman M, Chowdhury EK, Haque TM, Begum K, Hossain MA, Akter T, Haque F, Anwar T, Billah SM, Rahman AE, Huque MH, Christou A, Baqui AH, Bryce J, Black RE. Improving and sustaining quality of child health care through IMCI training and supervision: experience from rural Bangladesh. Health Policy Plan 2013 Sep 13.

128. Hossain MZ, Sikder SS, Zaman K, Saha P, Yunus M, Nelson KE, Labrique AB. Screening utility, local perceptions, and care-seeking for reported jaundeesh among respondents lacking signs of icterus in rural Bangladesh. J Health Popul Nutr 2013 Sep;31(3):367-75

129. Hossain S, Zaman K, Banu S, Quaiyum MA, Husain MA, Islam MA, Cooreman E, Borgdorff M, van Leth F. Tuberculin survey in Bangladesh, 2007-2009: prevalence of tuberculous infection and implications for TB control. Int J Tuberc Lung Dis 2013 Oct;17(10):1267-72

130. Huda MM, Rudra S, Ghosh D, Bhaskar KRH, Chowdhury R, Dash AP, Bhattacharya SK, Haque R, Mondal D. Low prevalence of *Leishmania donovani* infection among the blood donors in kala-azar endemic areas of Bangladesh. BMC Infect Dis 2013 Feb 2;13:62

131. Hulland KRS, Leontsini E, Dreibelbis R, Unicomb L, Afroz A, Dutta NC, Nizame FA, Luby SP, Ram PK, Winch PJ. Designing a handwashing station for infrastructure-restricted communities in Bangladesh using the integrated behavioural model for water, sanitation and hygiene interventions (IBM-WASH). BMC Public Health 2013 Sep 23;13:877

132. Huq NL, Edmonds TJ, Baker S, Busjia L, Devine A, Fotis K, Marella M, Goujon N, Keeffe J. The rapid assessment of disability—informing the development of an instrument to measure the effectiveness of disability inclusive development through a qualitative study in Bangladesh. Disabil CBR Inclusive Dev 2013 Aut 24(3):37-60

133. Imdad A, Mullany LC, Baqui AH, Arifeen SE, Tielsch JM, Khatry SK, Shah R, Cousens S, Black RE, Bhutta ZA. The effect of umbilical cord cleansing with chlorhexidine on omphalitis and neonatal mortality in community settings in developing countries: a meta-analysis. BMC Public Health 2013 Sep 17;13(Suppl 3):S15

134. Islam A, Labbate M, Djordjevic SP, Alam M, Darling A, Melvold J, Holmes AJ, Johura FT, Cravioto A, Charles IG, Stokes HW. Indigenous *Vibrio cholerae* strains from a non-endemic region are pathogenic. Open Biol 2013 Feb 13;3:120181

135. Islam A, Mikolon A, Mikoleit M, Ahmed D, Khan SU, Sharker MA, Hossain MJ, Islam A, Epstein JH, Zeidner N, Luby SP. Isolation of *Salmonella virchow* from a fruit bat (*Pteropus giganteus*) (short communication). Ecohealth 2013 Dec;10(4):348-

136. Islam MA, Huq M, Nabi A, Talukdar PK, Ahmed D, Talukder K, Cravioto A, Endtz H. Occurrence and characterization of multidrug-resistant New

Delhi metallo-lactamase-1-producing bacteria isolated between 2003 and 2010 in Bangladesh. J Med Microbiol 2013 Jan;62(1):62-8

137. Islam MM, Woodhouse LR, Hossain MB, Ahmed T, Huda MN, Ahmed T, Peerson JM, Hotz C, Brown KH. Total zinc absorption from a diet containing either conventional rice or higher-zinc rice does not differ among Bangladeshi preschool children. J Nutr 2013 Apr 1;143(4): 519-25

138. Islam MMSU, Nahar S, Sarker MN, Salimullah ASM, Rahman MA, Ahmed DS, Hasan MQ, Raihan ASMA, Bhuiyan MR, Sarker SA, Jalal MT. Efficacy of different laboratory tests to diagnose *Helicobacter pylori* infection. Faridpur Med. Coll. J. 2013;8(1): 11-14

139. Islam MR, Khatun R, Uddin MKM, Khan MSR, Rahman MT, Ahmed T, Banu S. Yield of two consecutive sputum specimens for the effective diagnosis of pulmonary tuberculosis. PLoS ONE 2013 Jul 2;8(7):e67678

140. Islam MS, Hossain MJ, Mikolon A, Parveen S, Khan MS, Haider N, Chakraborty A, Titu AM, Rahman MW, Sazzad HM, Rahman M, Gurley ES, Luby SP. Risk practices for animal and human anthrax in Bangladesh: an exploratory study. Infect Ecol Epidemiol 2013 Nov 27;3:21356

141. Islam MS, Mahmud ZH, Gope PS, Zaman RU, Hossain Z, Islam MS, Mondal D, Sharker MAY, Islam K, Jahan H, Bhuiya A, Endtz HP, Cravioto A, Curtis V, Touré O, Cairncross S. Hygiene intervention reduces contamination of weaning food in Bangladesh. Trop Med Int Health. 2013 Mar;18(3):250-8

142. Islam S, Harries AD, Malhotra S, Zaman K, Husain A, Islam A, Ahmed F. Training of community healthcare providers and TB case detection in Bangladesh. Int Health 2013;5(3):223-7

143. Islam S, Kenah E, Bhuiyan MAA, Rahman KM, Goodhew B, Ghalib CM, Zahid MM, Ozaki M, Rahman MW, Haque R, Luby SP, Maguire JH, Martin D, Bern C. Clinical and immunological aspects of post–kala-azar dermal leishmaniasis in Bangladesh. Am J Trop Med Hyg 2013 Aug;89(2):345-53

144. Islam SB, Chisti MJ, Shahrin L, Alam NH. Congenital chloride diarrhoea: first time diagnosis in Bangladesh and its management difficulties. Clin Case Rep 2013 May 18;3(7):283

145. Islam SMS, Lechner A, Ferrari U, Froeschl G, Niessen LW, Seissler J, Alam DS. Social and economic impact of diabetics in Bangladesh: protocol for a case-control study. BMC Public Health 2013 Dec 21;13:1217

146. Jahid IK, Hasan MM, Matin MA, Mahmud ZH, Neogi SB, Uddin MH, Islam MS. Role of polyphosphate kinase gene (ppk) for survival of *Vibrio cholerae* O1 in surface water of Bangladesh. Pakistan J Biol Sci 2013;16(22):1531-7.

147. Jain VK, Rivera L, Zaman K, Espos RA, Jr., Sirivichayakul C, Quiambao BP, Rivera-Medina DM, Kerdpanich P, Ceyhan M, Dinleyici EC, Cravioto A, Yunus M, Chanthavanich P, Limkittikul K, Kurugol Z, Alhan E, Caplanusi A, Durviaux S, Boutet P, Ofori-Anyinam O, Chandrasekaran V, Dbaibo G, Innis BL. Vaccine for prevention of mild and moderate-to-severe influenza in children. New Engl J Med 2013 Dec 26;369(26):2481-91

148. Jakhetia R, Talukder KA, Verma NK. Isolation, characterization and comparative genomics of bacteriophage SfIV: a novel serotype converting phage from *Shigella flexneri*. BMC Genomics 2013 Oct 3;14:677

149. Jutla A, Akanda AS, Huq A, Faruque ASG, Colwell R, Islam S. A water marker monitored by satellites to predict seasonal endemic cholera. Remote Sens Lett 2013;4(8):822-31

150. Jutla A, Whitcombe E, Hasan N, Haley B, Akanda A, Huq A, Alam M, Sack RB, Colwell R. Environmental factors influencing epidemic cholera. Am J Trop Med Hyg 2013 Sep;89(3):597-607

151. Kabir H, Saha NC, Oliveras E, Gazi R. Association of programmatic factors with low contraceptive prevalence rates in a rural area of Bangladesh. Reprod Health 2013 Jun 19;10(1):31.

152. Kamruzzaman M, Bari SMN, Faruque SM. *In vitro* and *in vivo* bactericidal activity of *Vitex negundo* leaf extract against diverse multidrug resistant enteric bacterial pathogens. Asian Pac J Trop Med 2013 May 13;6(5):352-9.

153. Kamruzzaman M, Shoma S, Bari SM, Ginn AN, Wiklendt AM, Partridge SR, Faruque SM, Iredell JR. Genetic diversity and antibiotic resistance in *Escherichia coli* from environmental surface water in Dhaka City, Bangladesh. Diagn Microbiol Infect Dis 2013 Jun;76(2):222–6

154. Karlsson EK, Harris JB, Tabrizi S, Rahman A, Shlyakhter I, Patterson N, O'Dushlaine C,

Schaffner SF, Gupta S, Chowdhury F, Sheikh A, Shin OS, Ellis C, Becker CE, Stuart LM, Calderwood SB, Ryan ET, Qadri F, Sabeti PC, LaRocque RC. Natural selection in a Bangladeshi population from the cholera-endemic Ganges river Delta. Sci Transl Med 2013 July 3;5: 192ra86

155. Khan AI, Hawkesworth S, Ekström EC, Arifeen S, Moore SE, Frongillo EA, Yunus M, Persson LA, Kabir I. Effects of exclusive breastfeeding intervention on child growth and body composition: the MINIMat trial, Bangladesh. Acta Paediatr 2013 Aug;102(8):815-23

156. Khan AI. Effects of pre- and postnatal nutrition interventions on child growth and body composition: the MINIMat trial in rural Bangladesh. Glob Health Action 2013 Dec 13;6:22476

157. Khan IA, Saha A, Chowdhury F, Khan AI, Uddin MJ, Begum YA, Riaz BK, Islam S, Ali M, Luby SP, Clemens JD, Cravioto A, Qadri F. Coverage and cost of a large oral cholera vaccination program in a high-risk cholera endemic urban population in Dhaka, Bangladesh. Vaccine 2013 Dec 9;31(51):6058-64

158. Khan JA, Ahmed S. Impact of educational intervention on willingness-to-pay for health insurance: a study of informal sector workers in urban Bangladesh. Health Econ Rev 2013 Apr 29;3(1):12.

159. Khan WA, Griffiths JK, Bennish ML. Gastrointestinal and extra-intestinal manifestations of childhood shigellosis in a region where all four species of *Shigella* are endemic. PLoS ONE 2013 May 17;8(5):e64097

160. Khanam F, Sheikh A, Sayeed A, Bhuiyan S, Choudhury FK, Salma U, Pervin S, Sultana T, Ahmed D, Goswami D, Hossain L, Mamun KZ, Charles RC, Brooks WA, Calderwood SB, Cravioto A, Ryan ET, Qadri F. Evaluation of a typhoid/paratyphoid diagnostic assay (TP Test) detecting anti-*Salmonella* IgA in secretions of peripheral blood lymphocytes in patients in Dhaka, Bangladesh. PLoS Negl Trop Dis 2013 Jul 11;7(7): e2316

161. Kippler M, Engström K, Mlakar SJ, Bottai M, Ahmed S, Hossain MB, Raqib R, Vahter M, Broberg K. Sex-specific effects of early life cadmium exposure on DNA methylation and implications for birthweight. Epigenetics 2013 May 1;8(5):494-503

162. Korpe PS, Liu Y, Siddique A, Kabir M, Ralston K, Ma JZ, Haque R, Petri WA, Jr. Breast milk parasite-specific antibodies and protection from amebiasis and cryptosporidiosis in Bangladeshi infants: a prospective cohort study. Clin Infect Dis 2013 Apr;56(7):988-92.

163. Kosek M, Haque R, Lima A, Babji S, Shrestha S, Qureshi S, Amidou S, Mduma E, Lee G, Yori PP, Guerrant RL, Bhutta Z, Mason C, Kang G, Kabir M, Amour C, Bessong P, Turab A, Seidman J, Olortegui MP, Lang D, Gratz J, Miller M, Gottlieb M, and for the MAL-ED network. Fecal markers of intestinal inflammation and permeability associated with the subsequent acquisition of linear growth deficits in infants. Am J Trop Med Hyg 2013 Feb;88(2):390-6

164. Kotloff KL, Nataro JP, Blackwelder WC, Nasrin D, Farag TH, Panchalingam S, Wu Y, Sow SO, Sur D, Breiman RF, Faruque ASG, Zaidi AKM, Saha D, Alonso PL, Tamboura B, Sanogo D, Onwuchekwa U, Manna B, Ramamurthy T, Kanungo S, Ochieng JB, Omore R, Oundo JO, Hossain A, Das SK, Ahmed S, Qureshi S, Quadri F, Adegbola RA, Antonio M, Hossain MJ, Akinsola A, Mandomando I, Nhampossa T, Acácio S, Biswas K, O'Reilly CE, Mintz ED, Berkeley LY, Muhsen K, Sommerfelt H, Robins-Browne RM, Levine MM. Burden and aetiology of diarrhoeal disease in infants and young children in developing countries (the Global Enteric Multicenter Study, GEMS): a prospective, case-control study. Lancet 2013 Jul 20;382(9888):209-22

165. Kumar V, Kesari S, Chowdhury R, Kumar S, Sinha G, Hussain S, Huda MM, Kroeger A, Das P. User friendliness, efficiency & spray quality of stirrup pumps versus hand compression pumps for indoor residual spraying. Indian J Med Res 2013 Aug;138(2):239-43

166. Labrique AB, Zaman K, Hossain Z, Saha P, Yunus M, Hossain A, Ticehurst J, Kmush B, Nelson KF. An exploratory case-control study of risk factors for Hepatitis E in rural Bangladesh. PLoS ONE 2013 May 14;8(5):e61351

167. LeFevre AE, Shillcutt SD, Waters HR, Haider S, Arifeen SE, Mannan I, Seraji HR, Shah R, Darmstadt GL, Wall SN, Williams EK, Black RE, Santosham M, Baqui AH for the Projahnmo Study Group. Economic evaluation of neonatal care packages in a cluster-randomized controlled trial in Sylhet, Bangladesh. Bull World Health Organ 2013 Oct 1;91(10):736-45

168. Legand A, Briand S, Shindo N, Brooks WA, de Jong MD, Farrar J, Aguilera X, Hayden FG. Addressing the public health burden of respiratory viruses: the Battle against Respiratory Viruses (BRaVe) Initiative. Future Virol 2013 Oct;8(10):953-68

169. Lehnertz NB, Alam A, Ali NA, Henry EG, Williams EK, Rahman SM, Ahmed S, Arifeen SE, Baqui AH, Winch PJ. Local understandings and current barriers to optimal birth intervals among recently delivering women in Sylhet District, Bangladesh. Int Health 2013 Dec;5(4):266-72

170. Lenters LM, Wazny K, Webb P, Ahmed T, Bhutta ZA.Treatment of severe and moderate acute malnutrition in low- and middle-income settings: a systematic review, meta-analysis and Delphi process. BMC Public Health 2013, 13(Suppl 3):S23

171. Leung DT, Das SK, Malek MA, Ahmed D, Khanam F, Qadri F, Faruque ASG, Ryan ET. Non-typhoidal *Salmonella* gastroenteritis at a diarrheal hospital in Dhaka, Bangladesh, 1996–2011. Am J Trop Med Hyg 2013 Am J Trop Med Hyg 2013 Apr;88(4):661-9

172. Leung DT, Uddin T, Xu P, Aktar A, Johnson RA, Rahman MA, Alam MM, Bufano MK, Eckhoff G, Wu-Freeman Y, Yu Y, Sultana T, Khanam F, Saha A, Chowdhury F, Khan AI, Charles RC, LaRocque RC, Harris JB, Calderwood SB, Kovác P, Qadri F, Ryan ET. Immune responses to the O-specific polysaccharide antigen in children who received a killed oral cholera vaccine compared to responses following natural cholera infection in Bangladesh. Clin Vaccine Immunol 2013 Jun;20(6):780-8

173. Lin A, Arnold BF, Afreen S, Goto R, Nurul Huda TMN, Haque R, Raqib R, Unicomb L, Ahmed T, Colford JM, Jr., Luby SP. Household environmental conditions are associated with enteropathy and impaired growth in rural Bangladesh. Am J Trop Med Hyg 2013 Jul;89(1 Suppl):130–7

174. Lin A, Bik EM, Costello EK, Dethlefsen L, Haque R, Relman DA, Singh U. Distinct distal gut microbiome diversity and composition in healthy children from Bangladesh and the United States. PLoS One. 2013;8(1):e53838.

175. Lindsay B, Ochieng B, Ikumapayi U, Aliou T, Ahmed D, Li S, Panchalingam S, Levine MM, Kotloff K, Rasko DA, Morris CR, Juma J, Fields BS, Dione M, Malle D, Becker SM, Houpt ER, Nataro JP, Sommerfelt H, Pop M, Oundo J, Antonio M, Hossain A, Tamboura B, Stine OC. Quantitative PCR for detection of *Shigella* improves ascertainment of *Shigella* burden in children with moderate-to-severe diarrhea in low-income countries. J Clin Microbiol 2013 Jun;51(6):1740-6.

176. Lindsay B, Pop M, Antonio M, Walker AW, Mai V, Ahmed D, Oundo J, Tamboura B, Panchalingam S, Levine MM, Kotloff K, Li S, Magder L, Paulson JN, Liu B, Ikumapayi U, Ebruke C, Dione M, Adeyemi M, Rance R, Stares MD, Ukhanova M, Barnes B, Lewis I, Ahmed F, Alam MT, Amin R, Siddiqui S, Ochieng JB, Ouma E, Juma J, Mailu E, Omore R, O'Reilly CE, Hannis J, Manalili S, Deleon J, Yasuda I, Blyn L, Ranken R, Li F, Housley R, Ecker D, Hossain MA, Breiman RF, Morris JG, McDaniel T, Parkhill J, Saha D, Sampath R, Stine OC, Nataro JP. Survey of culture, GoldenGate assay, Universal Biosensor Assay, and 16S rRNA gene sequencing as alternative methods of bacterial pathogen detection. J Clin Microbiol 2013 Oct 2013;51(10): 3263-9

177. Liu J, Gratz J, Amour C, Kibiki G, Becker S, Janaki L, Verweij JJ, Taniuchi M, Sobuz SU, Haque R, Haverstick DM, Houpt ER. A laboratory-developed TaqMan array card for simultaneous detection of 19 enteropathogens. J Clin Microbiol 2013 Feb;51(2):472-80

178. Maehira Y, Chowdhury EI, Reza M, Drahozal R, Gayen TK, Masud I, Afrin S, Takamura N, Azim T. Factors associated with relapse into drug use among male and female attendees of a three-month drug detoxification--rehabilitation programme in Dhaka, Bangladesh: a prospective cohort study. Harm Reduct J 2013 Sep 1;10:14

179. McCallin S, Sarker SA, Barretto C, Sultana S, Berger B, Huq S, Krause L, Bibiloni R, Schmitt B, Reuteler G, Brüssow H. Safety analysis of a Russian phage cocktail: from meta-genomic analysis to oral application in healthy human subjects. Virology 2013 Sep 1;443(2):187–96

180. McCormick DF, Rahman M, Zadrozny S, Alam A, Ashraf L, Neilsen GA, Kelly R, Menezes P, Miller WC, Hoffman IF. Prevention and control of sexually transmissible infections among hotel-based female sex workers in Dhaka, Bangladesh. Sex Health 2013 Nov;10(6):478-86

181. McDonald CM, Olofin I, Flaxman S, Fawzi WW, Spiegelman D, Caulfield LE, Black RE, Ezzati M, Danaei G; Nutrition Impact Model Study (Adair L, Arifeen S, Bhandari N, Fawzi W, Garenne

M, Kirkwood B, Mřlbak K, Katz J, Sommer A, West K, Jr., Penny M). The effect of multiple anthropometric deficits on child mortality: meta-analysis of individual data in 10 prospective studies from developing countries. Am J Clin Nutr 2013 Apr;97(4):896-901.

182. Milad G, Izzeldin S, Tofail F, Ahmed T, Hakim M, Khalil I, Petri WA. Association between child diarrhea and maternal depression. J Shaheed Suhrawardy Med Coll 2013 Jun;5(1):14-20

183. Mily A, Rekha RS, Kamal SMM, Akhtar E, Sarker P, Rahim Z, Gudmundsson GH, Agerberth B, Raqib R. Oral intake of phenylbutyrate with or without vitamin D3 upregulates the cathelicidin LL-37 in human macrophages: a dose finding study for treatment of tuberculosis. BMC Pulm Med 2013 Apr 16;13:23

184. Mondal D, Huda MM, Karmoker MK, Ghosh D, Matlashewski G, Nabi SG, Kroeger A. Reducing visceral leishmaniasis by insecticide impregnation of bed-nets, Bangladesh. Emerg Infect Dis. 2013 Jul;19(7):1131-4.

185. Monira S, Nakamura S, Gotoh K, Izutsu K, Watanabe H, Alam NH, Nakaya T, Horii T, Ali SI, Iida T, Alam M. Metagenomic profile of gut microbiota in children during cholera and recovery. Gut Pathog 2013 Feb 1;5(1):1.

186. Mullany LC, Shah R, Arifeen SE, Mannan I, Winch PJ, Hill A, Darmstadt GL, Baqui AH. Chlorhexidine cleansing of the umbilical cord and separation time: a cluster-randomized trial. Pediatrics 2013 Apr;131(4):708-15

187. Nahar N, Mondal UK, Sultana R, Hossain MJ, Khan MSU, Gurley ES, Oliveras E, Luby SP. Piloting the use of indigenous methods to prevent Nipah virus infection by interrupting bats' access to date palm sap in Bangladesh. Health Promot Int 2013 Sep;28:378-86

188. Nahar N, Uddin M, Sarkar RA, Gurley ES, Uddin Khan MS, Hossain MJ, Sultana R, Luby SP. Exploring pig raising in Bangladesh: implications for public health interventions. Vet Ital 2013 Mar;49(1):7-17

189. Nahar P, Collins AE, Bhuiya A, Alamgir F, Ray-Bennett N, Edgeworth R. Indigenous indicators of health security in relation to climatic disasters in Bangladesh. Environ Hazard 2013;12(1):32-46

190. Nahar Q, Xenos P, Abalos J. The changing transitions to adulthood across Southeast Asia: a census approach to cross-national comparisons. Ann Am Acad Pol Soc Sci 2013 Mar:646(1):42-68

191. Nahar S, Afrad MH, Begum N, Al-Mamun F, Sarker AK, Das SK, Faruque ASG, Pourkarim MR, Choudhuri MSK, Azim T, Rahman M. High prevalence of noroviruses among hospitalized diarrheal patients in Bangladesh, 2011. J Infect Dev Ctries 2013;7(11):892-6

192. Nahar S, Afrad MH, Fahmi T, Moni S, Haque W, Das SK, Faruque ASG, Choudhuri MSK, Azim T, Rahman M. A novel norovirus recombinant strain GII.4/GII.21 in Bangladesh, 2011. Virus Genes 2013 Jun;46(3):538-41

193. Nahar S, Afrad MH, Matthijnssens J, Rahman MZ, Momtaz Z, Yasmin R, Jubair M, Golamfaruque AS, Choudhuri MS, Azim T, Rahman M. Novel intergenotype human norovirus recombinant GII.16/GII.3 in Bangladesh. Infect Genet Evol 2013 Sep 27;20C:325-9

194. Nair H, Lau E, Brooks W, Seong A, Theodoratou E, Zgaga L, Huda T, Jadhav SS, Rudan I, Campbell H. An evaluation of the emerging vaccines against influenza in children. BMC Public Health 2013 Sep 17;13(Suppl 3):S14

195. Nair H, Simoões EAF, Rudan I, Gessner BD, Azziz-Baumgartner E, Zhang JSF, Feikin DR, Mackenzie GA, Moid'si JC, Roca A, Baggett HC, Zaman SMA, Singleton RJ, Lucero MG, Chandran A, Gentile A, Cohen C, Krishnan A, Bhutta ZA, Arguedas A, Clara AW, Andrade AL, Ope M, Ruvinsky RO, Hortal M, McCracken JP, Madhi SA, Bruce N, Qazi SA, Morris SS, Arifeen SE, Weber MW, Scott JAG, Brooks WA, Breiman RF, Campbell H. Global and regional burden of hospital admissions for severe acute lower respiratory infections in young children in 2010: a systematic analysis. Lancet 2013 Apr 20;381(9875):1380-90.

196. Nakajima C, Tamaru A, Rahim Z, Poudel A, Maharjan B, Aye KS, Ling H, Hattori T, Iwamoto T, Fukushima Y, Suzuki H, Suzuki Y, Matsuba T. A simple multiplex PCR for the identification of Beijing family of *Mycobacterium tuberculosis* with a lineage-specific mutation in Rv0679c. J Clin Microbiol 2013 Ju;51(7):2025-32

197. Nakazawa T, Khan AF, Yasueda H, Saito A, Fukutomi Y, Takai T, Zaman K, Yunus M, Takeuchi H, Iwata T, Akiyama K. Immunization of rabbits with nematode *Ascaris lumbricoides* antigens induces antibodies cross-reactive to house dust mite Dermatophagoides farinae antigens. Biosci Biotechnol Biochem 2013;77(1):145-50

198. Nasreen S, Khan SU, Azziz-Baumgartner E, Hancock K, Veguilla V, Wang D, Rahman M, Alamgir ASM, Sturm-Ramirez K, Gurley ES,

Luby SP, Katz JM, Uyeki TM. Seroprevalence of antibodies against highly pathogenic Avian influenza A (H5N1) virus among poultry workers in Bangladesh, 2009. PLOS ONE 2013 Sep 5;8(9):e73200

199. Nasrin D, Wu Y, Blackwelder WC, Farag TH, Saha D, Sow SO, Alonso PL, Breiman RF, Sur D, Faruque ASG, Zaidi AKM, Biswas K, van Eijk AN, Levine MM, Kotloff KL. Healthcare-seeking for childhood diarrhea in developing countries: evidence from seven sites in Africa and Asia. Am J Trop Med Hyg 2013 Jul;89(1 Suppl):3-12

200. Naved RT. Sexual violence towards married women in Bangladesh. Arch Sex Behav 2013 May;42(4):595-602

201. Naznin E, Kroeger A, Siddiqui NA, Sundar S, Malaviya P, Mondal D, Huda MM, Das P, Karki P, Banjara MR, Dreesch N, Gedik G. Human resource assessment for scaling up VL active case detection in Bangladesh, India and Nepal. Trop Med Int Health 2013 Jun;18(6):734–42

202. Nizame FA, Unicomb L, Sanghvi T, Roy S, Nuruzzaman M, Ghosh PK, Winch PJ, Luby SP. Handwashing before food preparation and child feeding: a missed opportunity for hygiene promotion. Am J Trop Med Hyg 2013 Dec;89(6):1179-85

203. Olival KJ, Islam A, Yu M, Anthony SJ, Epstein JH, Khan SA, Khan SU, Crameri G, Wang LF, Lipkin WI, Luby SP, Daszak P. Ebola virus antibodies in fruit bats, Bangladesh. Emerg Infect Dis 2013 Feb;19(2):270-3

204. Olofin I. McDonald CM, Ezzati M, Flaxman S, Black RE, Fawzi WW, Caulfield LE, Danaei G for the Nutrition Impact Model Study (anthropometry cohort pooling- Adair L, Arifeen S, Bhandari N, Garenne M, Kirkwood B, Mřlbak K, Katz J, Sommer A, West KP, Jr., Penny ME). Associations of suboptimal growth with all-cause and cause-specific mortality in children under five years: a pooled analysis of ten prospective studies. PLoS ONE 2013 May 29; 8(5):e64636

205. Omer SB, Zaman K, Roy E, Arifeen SE, Raqib R, Noory L, Seib K, Breiman RF, Steinhoff MC. Combined effects of antenatal receipt of influenza vaccine by mothers and pneumococcal conjugate vaccine receipt by infants: results from a randomized, blinded, controlled trial. J Infect Dis 2013 Apr 1; 207(7):1144-7

206. Owais A, Faruque ASG, Das SK, Ahmed S, Rahman S, Stein AD. Maternal and antenatal risk factors for stillbirths and neonatal mortality in rural Bangladesh: a case-control study. PLoS ONE 2013 Nov 7; 8(11):e80164

207. Perez-Heydrich C, Furgurson JM, Giebultowicz S, Winston JJ, Yunus M, Streatfield PK, Emch M. Social and spatial processes associated with childhood diarrheal disease in Matlab, Bangladesh. Health Place 2013 Jan;19:45-52.

208. Peterson KM, Buss J, Easley R, Yang Z, Korpe PS, Niu F, Ma JZ, Olortegui MP, Haque R, Kosek MN, Petri WA, Jr. REG1B as a predictor of childhood stunting in Bangladesh and Peru. Am J Clin Nutr 2013 May;97(5):1129-33

209. Pierce BL, Tong L, Argos M, Gao J, Farzana J, Roy S, Paul-Brutus R, Rahaman R, Rakibuz-Zaman M, Parvez F, Ahmed A, Quasem I, Hore SK, Alam S, Islam T, Harjes J, Sarwar G, Slavkovich V, Gamble MV, Chen Y, Yunus M, Rahman M, Baron JA, Graziano JH, Ahsan H. Arsenic metabolism efficiency has a causal role in arsenic toxicity: mendelian randomization and gene-environment interaction. Int J Epidemiol 2013 Dec;42(6):1862-71

210. Prue CS, Shannon KL, Khyang J, Edwards LJ, Ahmed S, Ram M, Shields T, Hossain MS, Glass GE, Nyunt MM, Sack DA, Sullivan DJ, Khan WA. Mobile phones improve case detection and management of malaria in rural Bangladesh. Malar J 2013 Feb 4;12:48

211. Purdy AE, Balch D, Lizárraga-Partida ML, Islam MS, Martinez-Urtaza J, Huq A, Colwell RR, Bartlett DH. Diversity and distribution of cholix toxin, a novel ADP-ribosylating factor from *Vibrio cholerae*. Environ Microbiol Rep 2010 Feb;2(1):198-207

212. Qadri F, Bhuiyan TR, Sack DA, Svennerholm AM. Immune responses and protection in children in developing countries induced by oral vaccines. Vaccine 2013 Jan 7;31(3):452-60

213. Rahman A, Rashu R, Bhuiyan TR, Chowdhury F, Khan AI, Islam K, Larocque RC, Ryan ET, Wrammert J, Calderwood SB, Qadri F, Harris JB. Antibody-secreting cell responses after *Vibrio cholerae* O1 infection and oral cholera vaccination in adults in Bangladesh. Clin Vaccine Immunol 2013 Oct;20(10):1592-8

214. Rahman A. Anwar I. Behavior change communications during antenatal visits using pictorial cards improves institutional delivery rates: evidence from Matlab, Bangladesh. Int J Trop Dis Health 2013 Jul 12;3(3):242-56

215. Rahman AS, Ahmed T, Ahmed F, Alam MA, Wahed MA, Sack DA. Double-blind cluster randomised controlled trial of wheat flour *chapatti* fortified with micronutrients on the status of vitamin A and iron in school-aged children in rural Bangladesh. Matern Child Nutr 2013 Jun 25; [Epub ahead of print]

216. Rahman AS, Sarker SA, Ahmed T, Islam R, Wahed MA, Sack DA. Relationship of intestinal parasites, *H. pylori* infection with anemia or iron status among school-age children in rural Bangladesh. J Gastroenterol Hepatol Res 2013 Sep 21;2(9):769-73

217. Rahman M, Sohel N, Yunus M, Chowdhury ME, Hore SK, Zaman K, Bhuiya A, Streatfield PK. Increased childhood mortality and arsenic in drinking water in Matlab, Bangladesh: a population-based cohort study. PLoS ONE 2013 Jan 28;8(1):e55014

218. Rahman MT, Mumu MA, Choudhury ATMM, Sultana R, Shirin S, Saeidullh M, Uddin MS, Sultana R, Sajani TT. Serum zinc, total & free psa, free/total psa ratio and prostate cancer association: a case-control study. Anwer Khan Modern Medical College J 2013 Jan;4(1):15-9

219. Rahman MT, Uddin MS, Sultana R, Moue A, Setu M. Polymerase chain reaction (PCR): a short review. Anwer Khan Modern Medical College J 2013 Jan;4(1):30-6

220. Rahman MZ, Akter S, Azmuda N, Sultana M, Weill F-X, Khan SI, Grimont PAD, Birkeland N-K. Serological cross-reaction between O-antigens of *Shigella dysenteriae* type 4 and an environmental *Escherichia albertii* isolate. Curr Microbiol 2013 Nov;67(5):590-5

221. Rahman SM, Ĺkesson A, Kippler M, Grandér M, Hamadani JD, Streatfield PK, Persson LĹ, Arifeen SE, Vahter M. Elevated manganese concentrations in drinking water may be beneficial for fetal survival. PLoS One. 2013 Sep 16;8(9):e74119

222. Rao VR, Neogi U, Talboom JS, Padilla L, Rahman M, Fritz-French C, Gonzalez-Ramirez S, Verma A, Wood C, Ruprecht RM, Ranga U, Azim T, Joska J, Eugenin E, Shet A, Bimonte-Nelson H, Tyor WR, Prasad VR. Clade C. HIV-1 isolates circulating in Southern Africa exhibit a greater frequency of dicysteine motif-containing Tat variants than those in Southeast Asia and cause increased neurovirulence. Retrovirology 2013 Jun 8;10:61

223. Rashid MA, Chowdhury KA, Mahmud SMS, Chowdhury T, Bhuyan AAM, Nahar Z, Paul SK. *Escherichia coli* from day old chicks of a selected breeder farm in Bangladesh. VETSCAN 2013;7(2):36-45

224. Rasul CH, Zaman MA, Hossain MJ, Nasrin E, Rahman M. Outcome and prognostic factors of acute meningoencephalitis in children of Southern Bangladesh. Sri Lanka J Child Health 2013;42(1):27-32

225. Razzaque A, Mustafa AH, Streatfield PK. Do self-reported health indicators predict mortality? Evidence from Matlab, Bangladesh. J Biosoc Sci 2013 Aug 12:1-14. [Epub ahead of print]

226. Rentschler G, Kippler M, Axmon A, Raqib R, Ekström EC, Skerfving S, Vahter M, Broberg K. Polymorphisms in iron homeostasis genes and urinary cadmium concentrations among nonsmoking women in Argentina and Bangladesh. Environ Health Perspect 2013 Apr;121(4):467-72

227. Robins WP, Faruque SM, Mekalanos JJ. Coupling mutagenesis and parallel deep sequencing to probe essential residues in a genome or gene. Proc Natl Acad Sci U S A 2013 Feb 26;110(9):E848-57

228. Roess AA, Winch PJ, Ali NA, Akhter A, Afroz D, Arifeen SE, Darmstadt GL, Baqui AH, and the Bangladesh PROJAHNMO Study Group. Animal husbandry practices in rural Bangladesh: potential risk factors for antimicrobial drug resistance and emerging diseases. Am J Trop Med Hyg 2013 Nov; 2013; 89: 965– 70

229. Root ED, Rodd J, Yunus M, Emch M. The role of socioeconomic status in longitudinal trends of cholera in Matlab, Bangladesh, 1993-2007. PLoS Negl Trop Dis 2013 Jan 10;7(1):e1997

230. Roth DE, Mahmud AA, Raqib R, Akhtar E, Black RE, Baqui AH. Pharmacokinetics of high-dose weekly oral vitamin D3 supplementation during the third trimester of pregnancy in Dhaka, Bangladesh. Nutrients 2013 Mar 12;5(3):788-810

231. Roth DE, Mahmud AA, Raqib R, Akhtar E, Perumal N, Pezzack B, Baqui AH. Randomized placebo-controlled trial of high-dose prenatal third-trimester vitamin D3 supplementation in Bangladesh: the AViDD trial. Nutr J 2013 Apr 12;12(1):47

232. Roth DE, Perumal N, Al Mahmud A, Baqui AH. Maternal vitamin D3 supplementation during the third trimester of pregnancy: effects on

infant growth in a longitudinal follow-up study in Bangladesh. J Pediatr 2013 Dec;163(6):1605-11

233. Roy M, Harris J, Afreen S, Deak E, Gade L, Balajee SA, Park B, Chiller T, Luby S. Aflatoxin contamination in food commodities in Bangladesh. Food Addit Contam Part B Surveill 2013;6(1):17-23

234. Rydbeck F, Bottai M, Tofail F, Persson L-Ĺ, Kippler M. Urinary iodine concentrations of pregnant women in rural Bangladesh: a longitudinal study. J Expo Sci Environ Epidemiol 2013 Nov 13. [Epub ahead of print]

235. Saha A, Chowdhury MI, Nazim M, Alam MM, Ahmed T, Hossain MB, Hore SK, Sultana GN, Svennerholm AM, Qadri F. Vaccine-specific immune response to an inactivated oral cholera vaccine and EPI vaccines in a high and low arsenic area in Bangladeshi children. Vaccine 2013 Jan 11;31(4):647-52

236. Saha UR, van Soest A. Contraceptive use, birth spacing, and child survival in Matlab, Bangladesh. Stud Fam Plann 2013 Mar;44(1):45-66.

237. Salam MA, Siddiqui MA, Nabi SG, Bhaskar KRH, Mondal D. Post-kala-azar dermal leishmaniasis with mucosal involvement: an unusual case presentation including successful treatment with miltefosine (case study). J Health Popul Nutr 2013 Jun;31(2):294-7

238. Samad MS, Itoh M, Moji K, Hossain M, Mondal D, Alam MS, Kimura E. Enzyme-linked immunosorbent assay for the diagnosis of Wuchereria bancrofti infection using urine samples and its application in Bangladesh. Parasitol Int 2013 Dec;62(6):564-7

239. Saquib N, Khanam MA, Saquib J, Anand S, Chertow GM, Barry M, Ahmed T, Cullen MR. High prevalence of type 2 diabetes among the urban middle class in Bangladesh. BMC Public Health 2013 Oct 31;13(1):1032.

240. Sarker AR, Islam Z, Khan IA, Saha A, Chowdhury F, Khan AI, Qadri F, Khan JA. Cost of illness for cholera in a high risk urban area in Bangladesh: an analysis from household perspective. BMC Infect Dis 2013 Nov 4;13(1):518

241. Sarker BK, Ahmed S, Islam N, Khan JA. Cost of behavior change communication channels of Manoshi -a maternal, neonatal and child health (MNCH) program in urban slums of Dhaka, Bangladesh. Cost Eff Resour Alloc 2013 Nov 14;11(1):28

242. Sarker SA, Jäkel M, Sultana S, Alam NH, Bardhan PK, Chisti MJ, Salam MA, Theis W, Hammarström L, Frenken LG. Anti-rotavirus protein reduces stool output in infants with diarrhea: a randomized placebo-controlled trial. Gastroenterology 2013 Oct;145(4):740-8.e8

243. Sarma H, Islam MA, Gazi R. Impact of training of teachers on their ability, skills, and confidence to teach HIV/AIDS in classroom: a qualitative assessment. BMC Public Health 2013 Oct 21;13:990

244. Sarma H, Oliveras E. Implementing HIV/AIDS education: impact of teachers' training on hiv/aids education in Bangladesh. J Health Popul Nutr 2013 Mar;31(1):20-7

245. Sazzad HMS, Hossain MJ, Gurley ES, Ameen KM, Parveen S, Islam MS, Faruque LI, Podder G, Banu SS, Lo MK, Rollin PE, Rota PA, Daszak P, Rahman M, Luby SP. Nipah virus infection outbreak with nosocomial and corpse-to-human transmission, Bangladesh. Emerg Infect Dis 2013 Feb;19(2):210-7.

246. Schlaudecker EP, Steinhoff MC, Omer SB, McNeal MM, Roy E, Arifeen SE, Dodd CN, Raqib R, Breiman RF, Zaman K. IgA and neutralizing antibodies to influenza A virus in human milk: a randomized trial of antenatal influenza immunization. PLoS ONE 2013 Aug 14;8(8):e70867

247. Scott S, Chowdhury ME, Pambudi ES, Qomariyah SN, Ronsmans C. Maternal mortality, birth with a health professional and distance to obstetric care in Indonesia and Bangladesh. Trop Med Int Health 2013 Oct;18(10):1193-201

248. Shahunja KM, Shahid ASMSB, Ashraf H, Faruque ASG, Das SK, Kamruzzaman M, Flora FP, Chisti MJ. Predictors of death in under-five children with sepsis attending an urban diarrheal treatment centre in Bangladesh. Food Nutr Sci 2013 Jul;4(7):709-14

249. Shenk MK, Starkweather K, Kress HC, Alam N. Does absence matter? : A comparison of three types of father absence in rural Bangladesh. Hum Nat 2013 Mar;24(1):76-110

250. Shenk MK, Towner MC, Kress HC, Alam N. A model comparison approach shows stronger support for economic models of fertility

decline. Proc Natl Acad Sci USA 2013 May 14;110(20):8045-50

251. Shroufi A, Chowdhury R, Anchala R, Stevens S, Blanco P, Han T, Niessen L, Franco OH. Cost effective interventions for the prevention of cardiovascular disease in low- and middle-income countries: a systematic review. BMC Public Health 2013 Mar 28;13:285

252. Smith AH, Yunus M, Khan AF, Ercumen A, Yuan Y, Smith MH, Liaw J, Balmes J, von Ehrenstein O, Raqib R, Kalman D, Alam DS, Streatfield PK, Steinmaus C. Chronic respiratory symptoms in children following in utero and early life exposure to arsenic in drinking water in Bangladesh. Int J Epidemiol 2013 Aug;42(4):1077-86

253. Stefanska B, Bouzelmat A, Huang J, Suderman M, Hallett M, Han Z-G, Al-Mahtab M, Akbar SMF, Khan WA, Raqib R, Szyf M. Discovery and validation of DNA hypomethylation biomarkers for liver cancer using hrm-specific probes. PLoS ONE 2013 Aug 7;8(8):e68439

254. Stockman LJ, Brooks WA, Streatfield PK, Rahman M, Goswami D, Nahar K, Rahman MZ, Luby SP, Anderson LJ. (2013) Challenges to evaluating respiratory syncytial virus mortality in Bangladesh, 2004–2008. PLoS ONE 2013 Jan 24;8(1):e53857.

255. Streatfield PK, Kamal N. Population and family planning in Bangladesh. J Pak Med Assoc 2013 Apr;63(4 Suppl. 3):S73-81

256. Sultana F, Nahar Q, Marions L, Oliveras E. Effect of post-menstrual regulation family-planning service quality on subsequent contraceptive use in Bangladesh. Int J Gynecol Obstet 2013 Nov;123 Suppl 1:e38-42

257. Sultana NK, Saha SK, Al-Emran HM, Modak JK, Sharker MA, El-Arifeen S, Cohen AL, Baqui AH, Luby SP. Impact of introduction of the *Haemophilus influenzae* type b conjugate vaccine into childhood immunization on meningitis in Bangladeshi infants. J Pediatr 2013 Jul;163(1 Suppl):S73-8

258. Sultana R, Mondal UK, Rimi NA, Unicomb L, Winch PJ, Nahar N, Luby SP. An improved tool for household faeces management in rural Bangladeshi communities. Trop Med Int Health 2013 Jul;18(7):854–60

259. Talukdar PK, Rahman M, Nabi A, Islam Z, Hoque MM, Endtz HP, Islam MA. Antimicrobial resistance, virulence factors and genetic diversity of *Escherichia coli* isolates from household water supply in Dhaka, Bangladesh. PLoS ONE 2013 Apr 3;8(4):e61090

260. Taniuchi M, Sobuz SU, Begum S, Platts-Mills JA, Liu J, Yang Z, Wang X-Q, Petri WA, Jr., Haque R, Houpt ER. Etiology of diarrhea in Bangladeshi infants in the first year of life analyzed using molecular methods. J Infect Dis 2013 Dec;208(11):1794–1802

261. Tofail F, Hamadani JD, Mehrin F, Ridout DA, Huda SN, Grantham-McGregor SM. Psychosocial stimulation benefits development in nonanemic children but not in anemic, iron-deficient children. J Nutr 2013 Jun1;143(6):885-93

262. Turner T, Burri BJ, Jamil KM, Jamil M. The effects of daily consumption of cryptoxanthin-rich tangerines and carotene-rich sweet potatoes on vitamin A and carotenoid concentrations in plasma and breast milk of Bangladeshi women with low vitamin A status in a randomized controlled trial. Am J Clin Nutr 2013 Nov;98(5):1200-8

263. Ud-Din AIMS, Wahid SUH, Latif HA, Shahnaij M, Akter M, Azmi IJ, Hasan TN, Ahmed D, Hossain MA, Faruque ASG, Faruque SM, Talukder KA. Changing trends in the prevalence of *shigella* species: emergence of multidrug-resistant *Shigella sonnei* biotype g in Bangladesh. PLoS ONE 2013 Dec 18;8(12):e82601

264. Uddin J, Sarma H, Bari TI, Koehlmoos TP. Introduction of new vaccines: decision-making process in Bangladesh. J Health Popul Nutr 2013 Jun;31(2):211-7

265. Uddin MKM, Chowdhury MR, Ahmed S, Rahman MT, Khatun R, van Leth F, Banu S. Comparison of direct versus concentrated smear microscopy in detection of pulmonary tuberculosis. BMC Res Notes 2013 Jul 25;6:291

266. Wahed T, Kaukab SS, Saha NC, Khan IA, Khanam F, Chowdhury F, Saha A, Khan AI, Siddik AU, Cravioto A, Qadri F, Uddin J. Knowledge of, attitudes toward, and preventive practices relating to cholera and oral cholera vaccine among urban high-risk groups: findings of a cross-sectional study in Dhaka, Bangladesh. BMC Public Health 2013 Mar 19;13:242

267. Warren JL, Perez-Heydrich C, Yunus M. Bayesian spatial design of optimal deep tube well locations in Matlab, Bangladesh. Environmetrics 2013 Sep;24(6):377–86

268. Winston JJ, Escamilla V, Perez-Heydrich C, Carrel M, Yunus M, Streatfield PK, Emch M. Protective benefits of deep tube wells against childhood diarrhea in Matlab, Bangladesh. Am J Public Health 2013 Jul;103(7):1287-91.

269. Wu J, Yunus M, Streatfield PK, Emch M. Association of climate variability and childhood diarrhoeal disease in rural Bangladesh, 2000-2006. Epidemiol Infect 2013 Oct 30:1-10. [Epub ahead of print]

270. Yoshimatsu S, Hossain MI, Islam MM, Chisti MJ, Okada M, Kamoda T, Fukushima T, Wagatsuma Y, Sumazaki R, Ahmed T. Hypophosphatemia among severely malnourished children with sepsis in Bangladesh. Pediatr Int 2013 Feb;55(1):79-84

271. Zogg CK, Ahmed T, Faruque ASG, Das SK, Imran G, Chisti MJ. Predictive factors of hyponatremia in under-five severely malnourished children with pneumonia admitted to a large urban hospital in Dhaka, Bangladesh: a nested case-control design. Food Nutr Sci 2013 Apr; 4(4):398-404

C. Book chapters, papers in conference proceedings, and monographs

1. Ahmed T, Hossain I, Islam M, Ahmed AMS, Chisti MJ. Protein-energy malnutrition in children. In: Magill AJ, Ryan ET, Hill DR, Solomon T, editors. Hunter's tropical medicine and emerging infectious diseases. New York: Saunders Elsevier, 2013:989-96

2. Arman S, Unicomb L, Luby SP. A qualitative exploration of factors affecting uptake of water treatment technology in rural Bangladesh. In: Banwell C, Ulijaszek S, Dixon J, editors. When culture impacts health: global lessons for effective health research. Amsterdam: Elsevier, 2013:205-14

3. Gazi R, Nahar Q, Kabir MH, Huque MH, Moinuddin M. Arifeen SE, Rahman APMS, Amin S, Afroze Z, Mahbub A. Child marriage in Bangladesh: findings from a national survey 2013. Dhaka: Plan International Bangladesh, 2013. 35 p.

4. Islam MA, Asadulghani M. Etiology and prevention of food-borne bacterial gastroenteritis. In: Vaishnavi C, editor. Infections of the gastrointestinal system. New Delhi: Jaypee Brothers Medical Publishers, 2013:13-30

5. Islam MS, Luby SP, Gurley ES. Developing culturally appropriate interventions to prevent person-to-person transmission of nipah virus in Bangladesh: cultural epidemiology in action. In: Banwell C, Ulijaszek S, Dixon J, editors. When culture impacts health: global lessons for effective health research. Amsterdam: Elsevier, 2013:329-37

6. Luby SP. The cultural anthropological contribution to communicable disease epidemiology. In: Banwell C, Ulijaszek S, Dixon J, editors. When culture impacts health: global lessons for effective health research. Amsterdam: Elsevier, 2013:43-52

7. Panda P, Dror I, Koehlmoos TP, Hossain SAS, John D, Khan JAM, Dror D. What factors affect take up of voluntary and community-based health insurance programmes in low- and middle- income countries? A systematic review (Protocol). London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London, 2013.

8. Parveen S, Sultana R, Luby SP, Gurley ES. Anthropological approaches to Outbreak Investigations in Bangladesh. In: Banwell C, Ulijaszek S, Dixon J, editors. When culture impacts health: global lessons for effective health research. Amsterdam: Elsevier, 2013:215-24

9. Pietroni M. Cholera: method of. In: Bope ET, Kellerman RD, editors. Conn's current therapy 2013. Philadelphia: Elsevier, 2013:84-7

10. Zaman K, Baqui AH. Diarrheal diseases. In: Allen LH, Prentice A, Caballero B. editors. Encyclopedia of human nutrition. 3rd ed. Waltham, MA: Academic Press, 2013:47-9

D. Letters, editorials, abstracts, etc. in journals

1. Afrad MH, Rahman MZ, Matthijnssens J, Das SK, Faruque A, Azim T, Rahman M. High incidence of reassortant G9P[4] rotavirus strain in Bangladesh: fully heterotypic from vaccine strains (letter). J Clin Virol 2013 Dec;58(4):755-6

2. Agho K, Rasheed S, Mihrshahi S, Senarath U, Dibley M. Delayed initiation of and non-exclusive breastfeeding among children aged 0-23 months in South Asia: a pooled analysis. Ann Nutr Metab 2013 Sep;63(Suppl 1):493

3. Ahmed M, Al-Mamun A, Abedin J, Luby SP, Satter SM, Paul RC, Widdowson M-A, Sturm-Ramirez K, Heffelfinger JD, Rahman M, Gurley ES. Incidence of acute gastroenteritis-associated mortality among children under five years of age in Bangladesh, 2010-12 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):427

4. Ahmed S, Goldberg GR, Roy SK, Raqib R, Haque S, Prentice A. Dietary calcium and phosphate intake in the aetiology of rickets in Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):725

5. Ahmed T, Choudhury N, Hossain MI, Islam MM, Schumacher B, dePee S, Tangsuphoom N, Muiruri J, Fuli R, Parveen M, Sarker S, West KP, Jr., Christian P. Development and acceptability of locally developed ready-to-use complementary-food-supplements (RUCFS) in urban slum settings of Dhaka, Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):582

6. Ahmed T, Hossain M, Chisti J, Mahfuz M, Islam M, Hossain I. Scaling-up prevention of stunting. Ann Nutr Metab 2013 Sep;63(Suppl 1):60

7. Alam DS, Chowdhury MA, Siddiquee AT, Pervin S, Ahmed S, Niessen LW. Raising awareness leads to high provider visits and blood pressure reduction among hypertensive patients in Bangladesh—a population-based cohort study (abstract). Circulation 2013 Mar; 127: AP371

8. Angdembe M, Choudhury N, Ahmed T, Haque R. Adherence to micronutrient powder (sprinkles) among children aged 6-59 months in rural Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):735

9. Arsenault J, Yakes E, Islam M, Hossain M, Ahmed T, Hotz C, Lewis B, Rahman A, Jamil K, Brown K. Very low micronutrient intake adequacy of women in rural Bangladesh is explained by limited diversity of nutrient-rich foods. Ann Nutr Metab 2013 Sep;63(Suppl 1):962

10. Arsenault JE, Yakes EA, Islam MM, Hossain MB, Ahmed T, Hotz C, Lewis B, Rahman AS, Jamil KM, Brown KH. Very low micronutrient intake adequacy of young children in rural Bangladesh is explained by limited diversity of nutrientrich foods (abstract). FASEB J 2013 Apr;27(Suppl):845.22.

11. Bhuiya A, Datta PG, Chowdhury AMR. Health progress and research culture in Bangladesh (letter). Lancet 2013 Nov 23;382(9906):1699

12. Chowdhury PD, Haque E, Lindsay R, Drebot KA, Brooks WA, Paul K. Understanding dengue transmission in Dhaka, Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):34

13. Ekström E-C, Eneroth H, Arifeen SE, Persson LĹ. Efficacy of micronutrient supplement intake in increasing hemoglobin in pregnancy: dose-effect comparisons with multiple micronutrient in the MINIMat trial in rural Bangladesh (abstract). FASEB J 2013 Apr;27(Suppl):845.25

14. Ellis CN, Mayo-Smith L, Rahman A, Uddin T, LaRocque RC, Ryan ET, Calderwood SB, Qadri F, Harris JB. Comparative proteomic analysis reveals activation of innate immune signaling pathways and the inflammasome in Bangladeshi cholera patients (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):291

15. English LK, Murray-Kolb LE, Chang S, Hamadani J, Arifeen SE, Baqui A, Black RE. Maternal iron status and depressive symptoms in rural Bangladesh (abstract). FASEB J 2013 Apr;27 (Suppl):845.2.

16. Fakruddin M, Mazumdar RM, Chowdhury A, Mannan KSB. A preliminary study on virulence factors & antimicrobial resistance in extra-intestinal pathogenic *Escherichia coli* (ExPEC) in Bangladesh (letter). Indian J Med Res 2013;137(5):988-90

17. Gazi R. Steroid hormone in ageing (editorial). Reprod Syst Sex Disord 2013;2(2):000e108

18. GeurtsvanKessel CH, Islam Z, Mohammad QD, Jacobs BC, Endtz HP, Osterhaus ADME. Hepatitis E and Guillain-Barré Syndrome (letter). Clin Infect Dis 2013 Nov;57(9):1369-70

19. Haque F, Rahman M, Banu NN, Raihan A, Chowdhury IA, Shamsuzzaman AK, Alamgir ASM, Luby SP, Gurley ES. An epidemic of Chikungunya in northwestern Bangladesh in 2011 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):134

20. Harding KL, Stewart CP, Matias SL, Moniruzzaman M, Mridha MK, Vosti SA, Dewey KG. Adherence to lipid-based nutrient supplement (LNS) and iron/folic acid tablet (IFA) recommendations during pregnancy among rural Bangladeshi women. Ann Nutr Metab 2013 Sep;63(Suppl 1):665

21. Hashizume M, Chaves LF, Faruque AS, Yunus M, Streatfield K, Terao T. The Indian Oean Diple and cholera incidence in Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):214

22. Hegde ST, Sazzad HM, Hossain MJ, Kenah E, Daszak P, Rahman M, Luby SP, Gurley ES. Risk factor analysis for nipah infection in Bangladesh, 2004 to 2012 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):278

23. Hossain SAS, Ahmed SU, Hadi M, Ahmed JU, Bangali M, Mong A, Husain MA. Leprosy elimination in Bangladesh: a neglected disease

revisited in 2012 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):354-5

24. Huq NL, Bhuiya F, Khan SI. Delivering HIV/AIDS messages on unprotected sex and condoms: through mosques of Bangladesh (abstract). Sex Transm Infect 2013 Jul;89 (Suppl 1):A291–2

25. Huq S, Hossain MI, Islam MM, Ahmed T. Acceptability and efficacy of ready-to-use therapeutic food in 6-24 months old children with severe acute malnutrition in Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):309

26. Islam M, Khatun M, Peerson J, Ahmed T, Mollah A, Dewey K, Brown K. Energy density and feeding frequency of complementary foods affects meal-specific food consumption and duration by healthy, breast fed Bangladeshi children. Ann Nutr Metab 2013 Sep;63(Suppl 1):1071

27. Islam MS, Sharif AR, Sazzad HM, Khan AKD, Hasan SMM, Akter S, Harun GD, Luby SP, Heffelfinger J, Rahman M, Gurley ES. Outbreak of sudden deaths among children living near Lychee orchards in northern Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):285-6

28. Jacob CG, Takala-Harrison S, Silva JC, Lanter C, Saunders D, Bethell D, Tyner S, Se Y, Lon C, Socheat D, Dondorp A, Imwong M, Hien TT, Satimai W, Sug-arum R, Mita T, Alam MS, Akter J, Fang H, Kyaw MP, Han KT, Nyunt MM, Mayxay M, Newton PN, Nosten F, Phyo AP, Noedl H, Starzengruber P, Tan JC, Ferdig MT, Fairhurst RM, Miotto O, Manske M, MacInnis B, Kwiatkowski D,White NJ, Ringwald P, Plowe1 CV. Falciparum malaria in the greater mekong subregion: mapping gene flow and genomic signatures of drug resistance (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):154-5

29. Jacob CG, Tan JC, Miller BA, Tan A, Saunders D, Lanten C, Lon C, Sug-arum R, Hoonchaiyaphum T, Satimai W, Mita T, Alam MS, Akter J, Fang H, Han KT, Takala-Harrison S, Ferdig MT, Plowe CV. Application of a *Plasmodium falciparum* whole genome SNP microarray to field samples collected as dried blood spots from Southeast Asia (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):263

30. Jahan S, Bhuiya A, Hanifi SMA, Iqbal M, Rasheed S. Determinants of salt consumption in rural Bangladesh: findings from assessment of 24 h urinary sodium excretions (abstract). Circulation 2013 Mar;127:AP094.

31. Jannat K, Unicomb LE, Stewart CP, Ashraf S, Rahman M, Ghosh PK, Luby SP. Leveraging a nutrient supplement trial to improve handwashing behavior. Ann Nutr Metab 2013 Sep;63(Suppl 1):1058

32. Jiang NM, Tofail F, Scharf RJ, Moonah SN, Taniuchi M, Ma JZ, Houpt ER, Niu F, Gurley ES, Hamadani JD, Azziz-Baumgartner E, Luby SP, Homaira N, Haque R, Petri WA, Jr. Febrile illness and pro-inflammatory cytokines in the first year of life predict impaired child development in Bangladeshi infants living in poverty (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):141

33. Jutla A, Whitcombe E, Hasan N, Haley B, Huq A, Akanda A, Alam M, Sack B, Colwell R. In response (letter). Am J Trop Med Hyg 2013 Dec; 89:1231-2

34. Khan SU, Islam MA, Rahman MZ, Islam A, Sazzad HMS, Epstein JH, Stroher U, Rahman M, Daszak P, Luby SP, Gurley ES. Nipah virus shedding among *Pteropus* bats in the context of a human outbreak in Bangladesh, 2012 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):18

35. Leung DT, Das SK, Malek MA, Qadri F, Faruque AS, Ryan ET. The impact of the Ramadan period in clinical parameters of patients seen at a diarrheal hospital in urban Dhaka, Bangladesh, 1996-2012 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):361

36. Leung DT, Uddin T, Alam MM, Rahman MA, Aktar A, Arifuzzaman M, Chowdhury F, Khan AI, Khanam F, Bhuiyan TR, Harris JB, Calderwood SB, Qadri F, Ryan ET. Immune response to cholera: lessons learned from children (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):290

37. Long K, Horder Z, Faruque A, Ahmed T, Ahmed S. Associations between nutritional status, household factors and specific diarrheal pathogens among children in Mirzapur, Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):679

38. Mahfuz M, Islam M, Hossain MI, Mondal D, Tofail F, Haque R, Ahmed T. Anemia and micronutrient status after micronutrient powder supplementation among malnourished and well-nourished children in an urban slum of Dhaka. Ann Nutr Metab 2013 Sep;63(Suppl 1):1471

39. Mahfuz M. Foiling inflammatory bowel disease (editors' choice). Sci Transl Med 2013 Oct 30;5(209):209ec178

40. Mahfuz M. REG1B: a marker of childhood stunting (editors' choice). Sci Transl Med 2013 Aug 7;5(197):197ec130

41. Mahfuz M. The Gut microbiome and malnutrition (editors' choice). Sci Transl Med 2013 Apr 3:5(179):179ec55

42. Mahfuz M. Zoning in on obesity (editors' choice). Sci Transl Med 2013 Sep 18;5(203):203ec154

43. Mridha M, Sarker B, Ferdous J, Reichenbach L. Availability of nutrition services in maternal, neonatal and child health (MNCH) facilities in Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):219

44. Operario DJ, Liu J, Taniuchi M, Becker S, Janacki L, Sobuz SU, Begum S, Kabir M, Haque R, Dione M, Manneh J, Antonio M, Ndealilia S, Maro A, Gratz J, Nissa TU, Kabir F, Kalam A, Qureshi S, Zaidi A, Neesanant P, Silapong S, Paphavee L, Bohidatta L, Mason C, Houpt E. Development, validation and international field performance of multiplex real-time qPCR assay panels for the detection of diarrheagenic viruses, bacteria and protozoa (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):328

45. Platts-Mills J, McCormick BJ, McGrath M, Miller M, Gratz J, Kosek M, Havt A, Amidou S, Zaidi A, Kang G, Haque R, Bodhidatta L, Houpt E. Association between eneropathogens, diarrhea and growth in the MAL-ED cohort (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):428

46. Platts-Mills JA, Liu J, Gratz J, Mduma E, Amour C, Swai N, Taniuchi M, Begum S, Flores J, Parker B, Fox J, Kosek M, Haque R, Houpt E. Prevalence of non-jejuni/coli campylobacter species detected by enzyme immunoassay and culture in the MAL-ED cohort study (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):430

47. Pullaim JR, Mirelman A, Khan SU, Sazzad HM, Hossain MJ, Paul RC, Luby SP, Gurley ES. A cost-effectiveness analysis of human and pig vaccination strategies to reduce the burden of Japanese encephalitis in Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):326

48. Rahman M, Nahar S, Afrad MH, Faruque ASG, Azim T. Norovirus variant GII.4/Sydney/2012, Bangladesh (letter). Emerg Infect Dis 2013 Aug;19(8):1347-8

49. Rahman S, Ahmed T, Rahman AS, Alam N. Groundwater iron in Bangladesh: does it contribute to population iron nutrition? Ann Nutr Metab 2013 Sep;63(Suppl 1):175

50. Ram PK, Nasreen S, Kamm K, Vujcic J, Kumar S, Rahman MA, Zaman K, Arifeen SE, Luby SP. Impact of an intensive perinatal handwashing promotion intervention on maternal handwashing behavior in the neonatal period: findings from a randomized controlled trial in rural Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):284-5

51. Rashed SM, Iqbal A, Mannan SB, Islam T, Mahamud-ur Rashid, Fatema-tuz Johura, Watanabe H, Hasan NA, Huq A, Stine OC, Sack RB, Colwell RR, Alam M. Vibrio cholerae O1 El Tor and O139 Bengal strains carrying ctxBET, Bangladesh. Emerg Infect Dis 2013 Oct;19(10):1713-5

52. Saha A, Bhuiya TR, Chowdhury F, Khan AI, Khan IA, Khan IA, Ali M, Clemens J, Cravioto A, Qadri F. Immunogenicity of an oral cholera vaccine, shanchol, in a large feasibility study in Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):213

53. Saha A, Qadri F. Infection: mass vaccination is feasible in response to cholera epidemics (news & views). Nat Rev Gastroenterol Hepatol 2013 Dec;10(12):700-1

54. Saha A, Chowdhury F, Khan AI, Khan IA, Begum F, Unicomb L, Luby SP, Ali M, Cravioto A, Clemens JD. Observations from the mass vaccination program with the oral cholera vaccine, Shanchol, in a high risk urban setting in Dhaka, Bangladesh 2011-2013 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):291

55. Saquib J, Saquib N, Anand S, Khanam M, Chertow G, Cullen M Obesity Prevalence Soars among Urban Middle-class in Bangladesh (abstract). Circulation 2013 Mar; 127: AP111.

56. Sattar SM, Luby SP, Parashar UD, Gastanaduy PA, Rahman M, Heffelfinger JD, Rahman M, Mamun AA, Islam K, Gurley ES. Hospital-based surveillance for rotavirus and intussusceptions among young children in Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):75

57. Sazzad HM, Hossain MJ, Luby SP, Rahman M, Hills S, Fischer M, Sejver J, Johnson BW, Gurley ES. Japanese encephalitis outbreak in western Bangladesh, 2011 (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):366

58. Sazzad HM, Luby SP, Stroher U, Daszak P, Heffelfinger JD, Rahman M, Gurley ES. Performance of risk exposure screening

questions to identify nipah cases on admission in surveillance hospitals in Bangladesh (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):134

59. Siddiqua T, Ahsan K, Rashid M, Shahab-Ferdows, Hampel D, Ahmed T, Ahmed S, Raqib R, Allen HL. Vitamin B12 in supplementation of Bangladeshi women during pregnancy and lactation increases Vitamin B12 in breast milk and improves infant status. Ann Nutr Metab 2013 Sep;63(Suppl 1):164

60. Siddiqua T, Islam S, Ahsan K, Rashid M, Hampel S, Shahab-Ferdows S, Allen LH, Raqib R. Vitamin B12 supplementation of Bangladeshi women in pregnancy and lactation: effects on maternal and infant status, breast milk and immunity (abstract). FASEB J 2013 Apr;27(Suppl):845.27

61. Talukder MRR, Rahman AE, Huque DME, Rahman M. Assessment of young infants' exclusive breastfeeding practice in geographically diverse areas of Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):785

62. Unicomb L, Nizame F, Biswas D, Ghosh P, Roy S, Sanghvi T, Luby S. Evidence linking handwashing to improved feeding outcome. Ann Nutr Metab 2013 Sep;63(Suppl 1):30

63. Unicomb L, Stewart C, Halder A, Huda T, Ghosh P, Luby S. Relationship between hand washing with soap and stunting among children <2 years from Bangladesh. Ann Nutr Metab 2013 Sep;63(Suppl 1):1010

64. Vallur AC, Reinhart C, Tutterrow Y, Mondal D, Bhasker KR, Duthie MS, Coler RN. Establishing biomarkers of *Leishmania donovani* infection: potential endpoints for vaccine trials (abstract). Am J Trop Med Hyg 2013 Nov;89 (5 Suppl 1):434

E. Abstracts in conference proceedings

1 Ahmad SM, Rashid M, Alam J, Raqib R. On birth live attenuated vaccines induce antimicrobial peptide response- possible nonspecific beneficial effect: a natural experiment (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:688

2 Ahmed S, Das SK, Ferdous F, Farzana FD, Faruque ASG. Memory aid as a tool for measuring duration of diarrhea in under-5 children (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1085

3 Ahmed S, Das SK, Ferdous FD, Malek MA, Hossain A, Ahmed D. Young childhood diarrhea without enteric pathogens in stool (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 august 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1079

4 Ahmed T. Childhood malnutrition: call for action (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:6

5 Ahmed T. New developments in the management of severe acute malnutrition (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:8

6 Alam NH, Ashraf H. Efficacy of L-isoleucine supplemented food and vitamin D in the treatment of acute diarrhea in children (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1751

7 Ara G, Rasheed S, Kabir I, Roy SK, Khanam M, Haider R, Agho KE, Mihrshahi S, Dibley MJ. Effect of extended peer counseling on breastfeeding practices in urban Dhaka, Bangladesh: community based randomized controlled trial (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:21

8 Ara G, Rasheed S, Kabir I, Roy SK, Khanam M, Haider R, Agho KE, Mihrshahi S, Dibley MJ. Peer counseling to improve complementary feeding practices of under-two year children in urban Dhaka Bangladesh: a community based randomized controlled trial (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:30

9 Ashraf H, Alam NH, Chisti MJ, Gyr N. Comparison of day care versus hospital care management of severe childhood pneumonia with severe malnutrition in Dhaka, Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1500

10 Bardhan PK, Mitchell CR, Sack DA. An exploratory clinical trial of liposome-based oral rehydration solution (ORS) in children with acute watery diarrhea (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 august 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1875

11 Chisti MJ, Graham SM, Duke T, Ahmed T, Ashraf H, Faruque ASG, Banu S, Raqib R, Sharmin L, Shahid ASMSB, Shahunja KM, Das SK, Salam MA. Validity of antibody in lymphocyte supernatant and clinical scoring for the diagnosis of tuberculosis in severely malnourished children presenting with severe/very severe pneumonia (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:24

12 Chisti MJ, Graham SM, Duke T, Ahmed T, Shahid ASMSB, Shahunja KM, Ashraf H, Faruque ASG, Banu S, Das SK. Risk factors for death in children with severe acute malnutrition and pneumonia following discharge from hospital after recovery from acute illness (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1112

13 Choudhury N. Strategies in controlling micronutrient deficiencies (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:8-9

14 Das R, Saha H, Shahid ASMSB, Sharifuzzaman, Chisti MJ. Factors associated with clinically diagnosed down syndrome in diarrhoeal children in an urban hospital in Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:28

15 Das SK, Ahmed S, Ferdous F, Farzana FD, Malek MA, Chisti MJ, Hossain A, Ahmed D, Faruque ASG. Enteric viral pathogens causing moderate to severe diarrhea among infant and young children in rural Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1092

16 Das SK, Ahmed S, Ferdous F, Farzana FD, Malek MA, Chisti MJ, Hossain A, Ahmed D, Faruque ASG. Malnourished under-5 children living in rural Bangladesh: enteric pathogens colonizing in their gut (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1094

17 Das SK, Chisti MJ, Huq S, Malek MA, Salam MA, Ahmed T, Faruque ASG, Mamun AA. Changing trend of obesity and overweight and their associated factors in urban Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the]

International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1099

18 Das SK, Chisti MJ, Huq S, Malek MAM, Kaur G, Salam MA, Ahmed T, Faruque ASG, Mamun AA. Clinical characteristics, etiology and antimicromial susceptibility among overweight and obese individuals with diarrhea in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1103

19 Faruque A, Das SK, Ahmed S, Chisti MJ, Ahmed D, Hossain A. Characteristics, etiology, and nutritional consequences of moderate to severe diarrhea associated with convulsion among rural under-5 children (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1098

20 Faruque A, Das SK, Ahmed S, Chisti MJ, Ferdous F, Farzana FD, Malek MA, Hossain A, Salam MA. Diversity in pathogens causing diarrhea among under-5 children in rural Bangladesh. In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1100

21 Faruque A, Das SK, Ahmed S, Ferdous F, Chisti MJ, Farzana FD, Malek MA, Hossain A. Bacterial etiology of under 5 years diarrhea children in rural Bangladesh: a case-control observation (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1093

22 Faruque A, Das Sk, Ahmed S, Ferdous F, Farzana FD, Ahmed D, Hossain A. Enteropathogens in malnourished under-5 children with moderate to severe diarrhea and asymptomatic malnourished children in rural Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1091

23 Faruque ASG, Das SK, Ahmed S, Chisti MJ, Ferdous F, Farzana FD, Malek MA, Hossain A. Shigella in rural Bangladesh: a recent update from the Global Enteric Multicentre Study (GEMS) (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1090

24 Ferdous F, Ahmed S, Das SK, Farzana FD, Faruque ASG. Factors associated with hospitalization due to diarrheal illness with cryptosporidium infection among under five children in rural Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1077

25 Ferdous F, Das SK, Ahmed S, Farzana FD, Faruque ASG. Etiology and clinical features of dysentery presenting with moderate-to-severe disease in under-five children in rural Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1081

26 Hoque DM, Salam SS, Huque H, Hossain A, Rahman AE, Rahman M, Arifeen SE. Effect of maternal, newborn and child survival interventions on newborn care practices in Bangladesh: findings from a community based cluster randomized study (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of

the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1947

27 Hossain I, Yasmin R, Ahmed T, Brown KH. Home-based care with follow-up at outpatient unit or community-follow-up center with/without food supplementation and/or psychosocial stimulation of children with moderate acute malnutrition in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1282

28 Huq S, Hossain MI, Islam MM, Ahmed T. Comparative efficacy of rice-lentil-based local foods and ready-to-use-therapeutic-food in nutritional management of children aged 6-24 months with severe acute malnutrition in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2434

29 Islam MM, Khatun M, Peerson JM, Ahmed T, Mollah MAH, Dewey KG, Brown KH. Meal-specific food consumption and feeding duration is affected by energy density and feeding frequency of complementary foods in healthy, breast fed Bangladeshi children (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2402

30 Islam Z, Ahammad RU, Farzana KS, Gilbert M, Jacobs BC, Endtz HP. Campylobacter jejuni gene polymorphism: a determinant for the development of guillain-barré syndrome in Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:36-7

31 Islam Z, Islam MB, Sarker SK, Ahammad RU, Farzana KS, Ara G, Mohammad QD, Jacobs BC, Endtz HP. Electrophysiological subtypes and prognosis of childhood Guillain-barré syndrome in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1438

32 Kabir I, Eneroth H, Khan Ai, Ekstrom L, Arifeen S. Effect of breastfeeding counseling and pre & post natal micronutrient supplementation on duration of exclusive breastfeeding: MiniMat, a randomised control trial (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1848

33 Karim AQMR, Hoque DME, Rahman M, Khorshed S, Shahidullah M, Mannan M, Rubayet S, Matin Z, Hossain A, Rahman S. Extent of neonatal sepsis in community: preliminary findings from a surveillance system of an operations research in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1301

34 Mahfuz M, Islam M, Hossain I, Mondal D, Haque R, Tofail F, Ahmed T. Iron deficiency anemia after micro-nutrient powder supplementation among malnourished and well-nourished children in an urban slum of Dhaka, Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1774

35 Musabbir N, Karin ASMB, Sultana K, Anwar SA, Kadir S, Hussain F, Haque A. Viral hepatitis: serological markers in children (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:34

36 Nahar B. Effects of psychosocial stimulation on improving home environment and child-rearing practices: results from a community-based trial among severely malnourished children in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1115

37 Rahman A, Rahman M, Rashid H. Complementary feeding index: a way to assess complementary feeding practices in rural area in Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:28-9

38 Rahman AS, Islam R, Larson CP, Koehlmoos T, Hasan MM, Raihan MJ, Ahmed T. Impact of nongovernmental organizational training on unlicensed healthcare providers in diarrhea management at a Bangladeshi rural community (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:27

39 Rahman M, Shoma S, Rashid H. Genomic changes in Streptococcus pneumoniae population in Bangladeshi children: implications for therapy and vaccination (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:872

40 Raihana S, Salam SS, Huque MH, Rahman M, Hoque DME, Matin Z, Hossain MA, Arifeen SE. Effect of maternal care seeking and newborn care practices on neonatal deaths in 14 sub-districts of Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2542

41 Saha A, Bhuiyan S, Khanam F, Svennerholm A-M, Qadri F. Malnutriton and parasite: their role on immune responses to oral cholera vaccine Dukoral in Bangladeshi children (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2102

42 Salam MA, Shahunja KM, Faruque ASG, Ashraf H, Bardhan PK, Das SK, Ahmed T, Chisti MJ. Impact of lack of intake of vitamin A on the development of clinical signs of pneumonia and diarrhoea in children under five admitted in an urban hospital, Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:29

43 Salam SS, Raihana S, Rahman M, Hossain A, Matin Z, Hoque DME, Arifeen SE. Use of antibiotics for the treatment of common childhood illnesses: findings from a community based cross-sectional survey in Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2603

44 Sarker MHR, Bardhan PK, Das SK, Chisti MJ, Shahid ASMSB, Shahunja KM, Faruque ASG. A comparative study of clinical and host characteristics of common diarrhoeal pathogens among under-two Bangladeshi children (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:26

45 Sarker MHR, Das SK, Ahmed S, Ferdous F, Farzana FD, Shahid ASMSB, Shahunja KM, Malek MA, Chisti MJ, Bardhan PK, Faruque ASG. Changing characteristics of rotavirus diarrhea in children younger than five years in urban

Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:23-4

46 Sarker SA, Nakamura S, Wagatsuma Y. Effect of prebiotic (fructooligosaccharide) on weight gain and reduction diarrhea episodes among children in a Bangladesh urban slum (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1975

47 Sarma H, Uddin J. Diversity of using illicit drugs among young street children in Bangladesh: a qualitative assessment (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2070

48 Shahid ASMSB, Salam MA, Ashraf H, Shahunja KM, Sarker MHR, Kabir S, Flora FP, Chisti MJ. Factors associated with streptococcal bacteraemia in under-five diarrhoeal children and their outcome in an urban hospital in Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:26-7

49 Shahunja KM, Ahmed T, Ashraf H, Shahid ASMSB, Das SK, Chisti MJ. Impact of diarrhoea on clinical signs of pneumonia in under-five children with severe acute malnutrition and radiologically proven pneumonia (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:28

50 Shahunja KM, Ahmed T, Faruque ASG, Shahrin L, Shahid ASMSB, Das SK, Chisti MJ. Predictors of nosocomial infection in under-five children and their common bacterial isolates attending an urban diarrhea treatment center in a developing country (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1421

51 Shahunja KM, Leung Dt, Shahid ASMSB, Das, SK, Chisti MJ. Factors associated with non-typical *salmonella* bacteraemia in ubder five children with diarrhea attending an urban diarrhea treatment centre in Bangladesh (abstract). In: Congress proceedings [of the] 13th Scientific Meeting of Commonwealth Association of Paediatric Gastroenterology and Nutrition: Changing Patterns of Paediatric Gastrointestinal Diseases, 6-7 December 2013. Colombo: Sri Lanka Collage of Paediatricians, 2013:27

52 Sultana S, Sarker SA, McCallin S, Barretto C, Berger B, Pittet A-C, Krause L, Huq S, Bibiloni R, Bruttin A, Reute G. Safety and tolerability test of an oral t4-like phage cocktail in healthy volunteers from Bangladesh (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:2398

53 Uddin J, Sama H, Azim T. Vulnerability of Bangladeshi street children to HIV/AIDS: findings from a participatory qualitative study (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:558

54 Zaman S, Sarmin M, Shahid ASMSB, Shahunja KM, Chisti MJ. Predictors of clinical sepsis in under-five children attending an urban diarrheal treatment center in a developing country (abstract). In: "Bridging the Gaps in Child and Adolescent Health": abstracts [book of the] International Congress in Pediatrics 2013, (ICP); the 27th Congress of the International Pediatric Association, 24-29 August 2013, Melbourne, Australia. Melbourne: International Pediatric Association, 2013:1332

James P. Grant School of Public Health (JPGSPH) (2013)

Publications

Journal Articles

1. A program impact pathway analysis identifies critical steps in the implementation and utilization of a behavior change communication intervention promoting infant and child feeding practices in Bangladesh. Rasmi Avula, Purnima Menon, Kuntal K. Saha, Mahbubul Islam Bhuiyan, Anita S. Chowdhury, Saiqa Siraj, Raisul Haque, Chowdhury S. B. Jalal, Kaosar Afsana, Edward A. Frongillo. The Journal of Nutrition. September 25, 2013:1-9
2. Achieving universal health coverage: state of community empowerment in Bangladesh. Taufique Joarder, Aftab Uddin and Anwar Islam. Global Health Governance. 2013. 6(2): 1-15
3. An empirical analysis of the impact of agricultural banking industry profitability in Bangladesh: an evaluation of internal indicators of RAKUB. Mahumud RA, Hossian MG, Sultana SZN. International Journal of Science and Research (IJSR). 2013; 2(1):558-66
4. Beyond drugs: tuberculosis patients in Bangladesh need nutritional support during convalescence. Islam QS, Ahmed SM, Islam MA, Kamruzzaman M, Rifat M. (2013). Public Health Action; 3(2):136-140
5. Clinical risk factors of death from pneumonia in children with severe acute malnutrition in an urban critical care ward of Bangladesh. Chisti MJ, Salam MA, Ashraf H, Faruque ASG, Bardhan PK, Hossain MI, Shahid ASMSB, Shahunja KM, Das SK, Imran G, Ahmed T. PLoS One 2013;8: e73728. doi:10.1371/journal.pone.0073728
6. Effective coverage for antiretroviral therapy in a Ugandan district with a decentralized model of care.Scheibe FJB., Waiswa P, Kadobera D, Mueller O, Ekstrom AM, Sarker M, Neuhann F. Plos 1, July 23, 2013
7. Exploring the roles, practices and service delivery mechanism of health service providers regarding TB in two urban slums of Dhaka. Hasib E, Khan TH, Sarker M, Islam S, Islam A, Husain A, Rashid SF. Current Urban Studies 2013. Vol.1, No.4, 139-147
8. Fatal outcome related risks in severely malnourished children with pneumonia in an urban critical care ward of Bangladesh. Chisti MJ, Salam MA, Hossain MI, Ashraf H, Faruque ASG, Bardhan PK, Shahid ASMSB, Shahunja KM, Das SK, Ahmed T. Bangladesh Crit Care J 2013;1:80-5
9. Harnessing pluralism for better health in Bangladesh. Ahmed SM, Evans TG, Standing H, Mahmud S. (2013). Lancet 382:1746-1755
10. Healthcare for poor people in the urban slums of Bangladesh. Afsana K, Wahid SS. The Lancet 2013,Dec 21;382(9910):2049-51
11. High quit rate among smokers with tuberculosis in a modified smoking cessation programme in Dhaka, Bangladesh. Siddiquea BN, Islam MA, Bam TS, Satyanarayana S, Enarson DA, Reid AJ, Husain MA, Ahmed SM, Ferdous S, Ishikawa N. Public Health Action 2013;3(3):243 -246
12. Impact of life expectancy on economicgrowth and healthcare expenditures: a case of Bangladesh, Mahumud RA, Rawal LB, Golam Hossain, Ripter Hossain, Nurul Islam. Universal Journal of Public Health 1(4): 180-186, 2013. DOI: 10.13189/ujph.2013.010405
13. Influence of gender roles and rising food prices on poor, pregnant women's eating and food provisioning practices in Dhaka, Bangladesh. Levay, A.V., Mumtaz, Z., Rashid, S.F. and Willows, N. (2013). Reproductive Health, 2013, 10:53
14. Intersectoral action for health: searching for a more inclusive approach. Taufique Joarder. International Health Policies. 2013[http://e.itg.be/ihp/archives/intersectoral-action-health-searching-inclusive-approach/]
15. McDonaldization without a McDonald's: globalization and food culture as social determinants of health in urban Bangladesh. Shahaduz Zaman, Nasima Selim and Taufique Joarder. Food, Culture and Society. 2013. 16(4):551-564
16. Multiple regression analysis of anthropometric measures influencing cephalic index of Japanese university male students. Hossain MG, Aik S, Mahumud RA, Ohtsuki F, Kamarul T. Singapore Medical Journal, 2013; 54(9):516-20
17. Outcome of standardized case management of under-5 children with severe acute malnutrition in three hospitals of Dhaka city in Bangladesh. Ahmed AU, Ahmed TU, Uddin MS, Chowdhury MHA, Rahman MH, Hossain MI, Bangladesh J Child Health 2013;37:5-13
18. Pulmonary tuberculosis in severely malnourished or HIV infected children with pneumonia: a review article. Chisti MJ, Ahmed T, Pietroni MAC, Faruque ASG, Ashraf H, Bardhan PK, Hossain

MI, Das SK, Salam MA. J Health Popul Nutr 2013;31:308-13

Book chapters

1. Ethical considerations of global health partnership, Murphy J, Neufeld VR, Habte D, Aseffa A, Afsana, K, Kumar A, Larrea MDL, Hatfield, J. In Andrew D Pinto and Ross E.G Uoshur (Eds) An Introduction to Global Health Ethics, Routledge, 2013
2. Informal Markets in Sexual and Reproductive Health Services and Commodities in Rural and Urban Bangladesh. Standing, H., Rashid, S. F., and Akram, O. (2013). Published in 'Transforming Health Markets in Asia and Africa: Improving Quality and Access for the Poor' edited by Gerald Bloom, Barun Kanjilal, Henry Lucas and David H. Peters; Routledge NY
3. Protein-energy Malnutrition in Children. Ahmed T, Hossain MI, Islam, Ahmed AMS, Chisti MJ. Hunter's Tropical Medicine and Emerging Infectious Diseases 9th Eds: Magill, Ryan, Hill, Solomon, 2013 (page 989-996).
4. Urban Poverty, Climate Change and Health Risks for Slum Dwellers in Bangladesh. Rashid, S.F., Gani, M.S. and Sarker, M. (2013). In Shaw, R., Mallick, F. and Islam, A. (Eds.). Climate Change Adaptation Actions in Bangladesh (51-70). Tokyo: Springer Japan.

Reports

1. A study on knowledge, attitude and practices of tuberculosis and BRAC TB Control Programme Funded by BRAC supported by GFATM. April 2013-June 2013
2. Developing TVET, HE and training on sexual and reproductive health and rights (SRHR)in the health and population sector in Bangladesh. Centre for Gender and Sexual Reproductive Health Rights. NUFFIC, 2013
3. Developing TVET, HE and training on sexual and reproductive health and rights (SRHR)in the health and population sector in Bangladesh. Centre for Gender and Sexual Reproductive Health Rights. NUFFIC, 2013
4. Health professional education of Bangladesh: a situation analysis. James P Grant School of Public Health at BRAC Institute of Global Health (BIGH), BRAC University, Bangladesh. RTM-International. 2013
5. Project report title: the emerging role of medical assistant training schools in Bangladesh: a situation analysis. Director of Medical Education & HMPD, DGHS, Human Resource Management Unit, MOHFW, James P Grant School of Public Health at BRAC Institute of Global Health (BIGH), BRAC University, Bangladesh. Supported by World Health Organization Under BAN HRH Program. 2013
6. Short course on universal health coverage for junior faculty and youngprofessionals in health and development organized by Centre of Excellencefor Universal Health Coverage, icddr,b and JPGSPH, BRAC University. 2013
7. State of food security and nutrition in Bangladesh 2011. Helen Keller International (HKI), James P. Grant School of Public Health (JPGSPH) and Bangladesh Bureau of Statistics (BBS). 2013
8. Technical report of APW project title: the assessment of rural retention policies for human resources for health in Bangladesh. Director of Medical Education & HMPD, DGHS, Human Resource Management Unit, MOHFW, James P. Grant School of Public Health at BRAC Institute of Global Health (BIGH), BRAC University, Bangladesh. World Health Organization under BAN HRH Program. 2013
9. Report on Secondary data findings regarding early marriage and early childbearing - TRAction study on understanding the role of community in preventing early marriage and early childbearing: an exploratory study. Chowdhury, Asiful Haidar, Ismat Bhuiya and Razibuzzaman Shah. 2013. Dhaka, Bangladesh: BRAC Institute of Global Health, BRAC University and icddr,b

Institute of Epidemiology, Disease Control and Research (IEDCR) (2013)

Research

1. Tuberculosis Prevalence Survey in Bangladesh. Principal Investigator: Prof Mahmudur Rahman; Co-investigator: Dr. M Mushtuq Husain, Dr. Asif Mujtaba Mahmud, Dr. Ahmad Raihan Sharif, Dr. Mahbubur Rahman *et al*.
2. Foodborne Illness Surveillance. Principal Investigator: Prof Mahmudur Rahman; Co-investigator: Dr. M Mushtuq Husain, Dr. Salim Uzzaman, Prof A.K.M. Shamsuzzaman, Dr. Farhana Haque *et al*.
3. Evaluation of Web-based Disease Surveillance on Foodborne Illness. Dr. Kazi Ahmed Zaki
4. Evaluation of Influenza Surveillance. Dr. Monalisa

5. Evaluation of EPI Surveillance. Dr. Mallik Masum Billah
6. Evaluation of TB Surveillance. Dr. Rabeya Sultana
7. Evaluation of Non-communicable Disease Surveillance. Dr. Shamsad Rabbani Khan

Publications

1. Emily S. Gurley; M. Jahangir Hossain; Repon C. Paul; Hossain M.S. Sazzad; M. Saiful Islam; Shahana Parveen; Labib I. Faruque; Mushtuq Husain; Khorshed Ara; Yasmin Jahan; Mahmudur Rahman; Stephen P. Luby. Clinical Infectious Diseases 2014; doi: 10.1093/cid/ciu383
2. Richard Cash, Shantana R Halder, Mohammad Mushtuq Husain, Sirajul Islam, Fuad H. Mallick, Maria A May, Mahmudur Rahman, M Aminur Rahman. Reducing the health effect of natural hazards in Bangladesh. The Lancet (Series: Bangladesh: Innovation for Universal Health Coverage). November 2013. P 57-66.
3. Nuzhat Choudhury, Tahmeed Ahmed, Md. Iqbal Hossain, Barendra Nath Mandal, Golam Mothabbir, Mustafizur Rahman, M. Munirul Islam, Mohammad Mushtuq Husain, Makhduma Nargis, and Ekhlasur Rahman. Community-based management of acute malnutrition in Bangladesh: Feasibility and constraints. Food and Nutrition Bulletin, vol. 35, no. 2. 2014, The Nevin Scrimshaw International Nutrition Foundation.

National Institute of Cardiovascular Diseases (NICVD)

Research protocols

1. Reduction of peri-procedural myocardial injury by bolus dose of atorvastatin before PCI
2. Impact of blood glucose status at admission on clinical outcome of thrombolysed patients with ST-segment elevation in AMI.
3. Study of risk factors and in hospital outcome AMI in young adults
4. Angiographic correlation of quantitative ST segment depression in 12 lead ECG in non-ST segment elevation ACS
5. Association of hypertension with development of coronary collaterals in server CAD
6. Angiographic severity of acute STEMI patients with or without metabolic syndrome
7. Clinical and echo evaluation of inferior MI with or without RV infarction
8. Correlation of magnitude of ST segment elevation in acute inferior MI with the proximity of RCA lesion
9. Echo evaluation of LV diastolic dysfunction after PCI
10. Angiographic status of prolonged QRS duration in patients with acute MI
11. Assessment of ventricular dyssynchrony in heart failure with normal QRS complex
12. Effect of statin therapy in ventricular arrhythmia in patients with acute anterior MI
13. Effect of PTMC on pulmonary function
14. Coronary angiographic correlation with troponin-I level in acute STEMI
15. Impact of blood glucose level on contrast induced nephropathy after PCI in patients not known to be diabetic with ACS
16. Increased arterial stiffness correlates with the severity of coronary artery disease
17. In-hospital outcome of comptomised small side branch after percutaneous coronary intervention
18. Risk factor profile of pre-menopausal woman with acute coronary syndrome
19. Correlation between elevated B type natriuretic peptide levels with extent of coronary artery disease in patient with unstable angina
20. Comparison of in hospital outcome between transradial and transfemoral PCI
21. Correlation of cardiac troponin I with left ventricular systolic function in a patient with acute ST segment elevated myocardial infarction
22. Aortic pulse wave velocity correlates with the severity of coronary artery disease in patient with STEMI
23. Association of atherosclerotic renal artery stenosis with coronary artery disease
24. Association of severity of CAD with mitral annuaar calcification under 65 years of age
25. Association of left atrial volume index and in hospital outcome in patients with anterior myocardial infarction
26. Association of hyperglycemia with angiographic severity of coronary artery disease in patients with acute coronary syndrome

27. Effect of tranexamic acid on post-operative bleeding following myocardial revascularization (CABG) using cardiopulmonary bypass
28. Early outcome of OPCAB in patients with multivessel diseases
29. Effect of peri-operative oral sildenafil on pulmonary hypertension after congenital heart surgery
30. In-hospital outcome after primary total correction of tetralogy of fallot in different age-groups
31. Early outcome of prolonged cardiopulmonary bypass time on renal function in patients of open heart surgery at NICVD, Dhaka
32. Early outcome of CABG surgery in patients with pre-operative elevated level of HBAIc with undiagnosed DM
33. Early outcome of OPCAB in patients with multivessel disease with or without prior myocardial infarction
34. Preoperative high sensitive C reactive protein level predicts early outcome after coronary artery bypass graft surgery
35. Evaluation of pulmonary function between off-pump and on-pump CABG surgery
36. Evaluation of myocardial preservation following ante-grade and retrograde cardioplegia in AVR
37. Early outcome of mitral valve replacement in patients having mitral stenosis with severe pulmonary hypertension
38. Early outcome of peri-operative hyperglycemia in patients undergoing CABG with or without DM
39. Immediate post-operative outcome in double valve replacement patients with or without preservation of mitral subvalular structures
40. Atorvastatin pre-treatment diminishes the myocardial ischemic markers early after CABG operation
41. Early outcome of VSD with pulmonary hypertension
42. Association of HbA1C with severity of CAD in non-diabetic patients with NSTEMI
43. In-hospital outcome and angiographic finding in acute inferior MI with STEMI in posterior chest leads (V7 ,V8, V9) following thrombolysis
44. Effect of PCI on QT dispersion in patient with angina
45. Association of aortic rulse-wave velocity with the severity of CAD in patient with NSTEMI
46. Association of left atrial spontaneous echo-contrast to inflammatory markers in patients with MS
47. Pre-procedural high-sensitivity CRP is a predictor of in-hospital outcome of patients undergoing PCI
48. Association of renal impairment and severity of CAD
49. Comparison of CAD severity between pre and post-menopausal women in ACS
50. Association of GRACE risk score with angiographic severity of coronary artery diseases in patient with AMI.
51. Association of p-wave dispersion with LV-diastolic dysfunction in patients with IHD
52. Early outcome of conventional CABG with pre-operative hyperglycemia in diabetic and non-diabetic patients in NICVD
53. Early outcome of mitral valve replacement in patients having mitral stenosis, with moderate to severe pulmonary hypertension
54. Evaluation of myocardial preservative following AVR with antigrade verves both anligrade and retrograde cardioplegia
55. Comparison of early surgical outcome of VSD with mild versus moderate to severe pulmonary hypertension
56. Effect of preoperative high dose Atorvastation on the level of myocardial ischemia marker (Troponin-I) early after CABG

Institute of Child & Mother Health (ICMH)

Research and publications

1. The epidemiological and etiological aspects of Infertility of women in a selected infertility center& Bangladesh. Prof. Dr. Md. Abidul Haque, ICMH
2. Corporal punishment in school and the risk for children's physical and psychological, health. SM Abu Naser Faruk, Miriam Eliasson: ICMH Journal: Vol. 2; Number 1, Jan 2011: 12-20
3. A clinical study of advanced maternal age on obstetric outcome in tertiary-care hospital. Shahnema Nargis, Nazneen Kabir.
4. Status of hepatities B vaccination and perception of preventive measures for infection among the healthcare providers in a periurban hospital. Saria Tasnim, FM Anamul Hoque

5. Effects of prophylactic probiotics on reduction of feeding intolerance in low-birthweight babies. Rubiya Parvin: ICMH Journal, Vol. 4, Number 2 July 2013 (71-76)
6. HELP syndrome: recognition and perinatal management. Nahid Yasmin, ICMH Journal: vol 4; Num:2; July Lol3 (101-106)
7. Case report: pubopenile ectopic testis: a rare encounter in pediatric surgical practice. Afruzul Alam, K Raihan Hossain, Suprotim H, Saiful Ahmed, Rezaul Haque, ICMH Journal, July 2013. Vol. 4, Number 2 (111-112)
8. Persistentpulmonary hypertension of a newborn. Delwar Hossain, Rezaul Haque, Jasimuddin Majumder EE AC, 2013, ICMH Journal, Vol. 4; Number 2

National Institute of Preventive & Social Medicine (NIPSOM)

Thesis topics of the faculty of NIPSOM

1. Surveillance of nosocomial infections and daily antibiotic cost at tertiary hospital in Bangladesh. Principal Investigator Prof. Dr. Akhtarun Naher, Funded by BMRC
2. Second-hand tobacco smoke and respiratory problems among the infant of smokers and non-smokers patients. Principal Investigator Dr. Khorshed Ali Miah, Funded by Johns Hopkins Bloomberg School of Public Health
3. Maternal serum zinc level in pregnancies with foetal neural tube defect. Principal Investigator Dr. Kazi Shafiqul Halim, Funded by DGHS
4. Multidrug-resistant tuberculosis: illness perception of patients during and after treatment. Principal Investigator Dr. Kazi Shafiqul Halim, Funded by NTP, DGHS
5. Appraisal of malaria status: areas in contrast to endemic districts of Bangladesh. Principal Investigator Dr. Kazi Shafiqul Halim, Funded by CDC, DGHS
6. Assessment of public health professionals: production and utilization. Principal Investigator Prof. Meerjady Sabrina Flora, Funded by WHO
7. Evaluation of community clinics, community groups, and community support groups. Principal Investigator Prof. Meerjady Sabrina Flora, Funded by WHO
8. Portable personal listening devices use and hearing health: adolescents' perceptions and behaviour of loud music and hearing conservation. Principal Investigator Prof. Meerjady Sabrina Flora, Funded by BMRC

Thesis topics of the students of MPH (Hospital Management)

1. Pattern safety practices among the clinical care providers in tertiary-level public and private hospitals in Dhaka City. Dr. Bushra Marzan Rauf
2. Prescription pattern of antibiotics in pediatric outpatient department in secondary level hospitals of Bangladesh. Dr. Farhana Dilshad
3. Utilization of laboratory services in some selected primary and secondary-level hospitals of Sirajganj district. Dr. Md. Ferdoush Rahman
4. Medical audit of inpatient department of Rangpur Medical College Hospital. Dr. Gazi Ikhtiar Ahmed
5. Patient safety practices among the clinical service providers in Naogaon 100-bed district hospitals of Bangladesh. Dr. Fatema Akhter
6. Management of emergency department in upazila health complexes. Dr. Ummay Salma Rahman
7. Patients' satisfaction at dental outpatient department of aselected tertiary-level hospital. Dr. Tania Tahsin
8. Management of medical waste in tertiary-level hospitals in Dhaka city. Dr. Nahar Sultana
9. Facilities of inpatient services in a upazila health complex of Bangladesh. Dr. Farzana Rahman Borna
10. Needle stick injuries among healthcare workers in tertiary-level hospitals. Dr. Hasina Jannat
11. The facilities and costing of dialysis patients in public and private hospitals in Dhaka city. Dr. Ulfat Ara
12. Knowledge and practices of hepatitis B vaccination among the university students. Dr. Md Abdulla Hil Kafi
13. Patient satisfaction about nursing services of adistrict hospital in Bangladesh. Moni Rosy Roy
14. Knowledge on nosocomial infection among nurses of tertiary-level public and private hospitals in Mymensingh district. Shahida Parvin
15. Knowledge and practice about post-operative infection control among nurses of National Institute of Cardiovascular Diseases & Hospital (NICVD). Dr. Sumita Rani Sarkar

16. Knowledge and practice about prevention of hepatitis B virus infection among the nurses in Rangpur Medical College Hospital, Rangpur. Mst. Sufia Begum
17. Infection control practice among the nurses in orthopedic operation theatres of two selected hospitals. Mosammat Ratna Moni
18. Human resources management in district hospitals of Bangladesh. Dr. Neela Barman
19. Medical record management in district hospitals in Bangladesh. Dr. Mst. Shahana Khatun
20. Management of casualty departments in tertiary-level hospitals. Dr. T.M. Shahidul Islam

Thesis topics of the students of MPH (HSM&P)

1. Management of medical store in public hospitals. Dr. Nawsheen Zahan
2. Study on hypertensive patient management admitted in the inpatient departments in some district hospitals of Bangladesh. Dr. Wahedul Alam Almajidi
3. Quality of OPD services in Dhaka Dental College Hospital. Dr. Qazi Tanzin Ahmed
4. Management of dietary service in public and private hospitals. Dr. S.M. Sadequl Hasan
5. Management of linen services in selected government and private hospitals. Dr. Fatima Tuz. Zohra Makkia
6. Infection control practices in public and private hospitals in Dhaka city. Dr. Naima Nimmi
7. Health-seeking behavior of the parents having children with autism in Shishu Bikash Kendra of Dhaka city. Dr. Mottakin Ahmad.
8. Support services at inpatient departments of tertiary-level of public and private hospitals. Dr. Sharmin Sultana
9. Management of operation theatre in tertiary-level hospitals. Dr. Ashik Qureshi
10. Assessment of patients' satisfaction on OPD services in a selected upazila health complex of rural Bangladesh. Maya Barua
11. Oral health awareness among the patients attending some selected community clinics in Jamalpur district. Dr. Fahmida Gul-E-Nur
12. Parents' awareness of diagnostic and intervention services for children with autism in Dhaka city. Dr. Marina Sultana
13. Job satisfaction among nurses working in government hospitals in selected districts. Mohammad Siddiqur Rahman Khan
14. Management of outpatient services of upazila health complexes. Dr. Md. Selim Hossain Farazi

Thesis topics of the students of MPH (CM)

1. Tobacco consumption and infertility. Dr. Shabnam Sharmin
2. Osteoarthritis and glycemic status among type 2 diabetes mellitus patients. Dr. Syeda Masuma Siddiqua
3. Treatment seeking behavior of breast cancer patients. Dr. Shamima Begum
4. Anxiety and academic performance among the private medical college students. Dr. Ferdousi Sultana
5. Academic stress among adolescent students. Dr. Farhana Chaiti
6. Pattern of congenital heart diseases. Dr. Fatema Rahman
7. Depression among chronic kidney disease patients. Dr. Kanij Sultana
8. Factors related to delay in diagnosis of multidrug-resistant tuberculosis. Dr. Mousume Shabnam
9. Parenting stress among the mother of children with Down syndrome. Dr. Sharmin Khan
10. Expectation and satisfaction regarding community clinic services in disaster-prone rural communities. Dr. Salma Binte Rahman
11. Post-traumatic stress disorder (PTSD) among road traffic accident (RTA) victims. Dr. Shayla Haque
12. Community perception regarding rabies between intervention and non-intervention communities. Dr. Tawfima Islam
13. Financial burden of lung cancer patients attending a specialized hospital. Dr. Pranab Kumar Roy
14. Newborn care practice among the mothers in urban slums. Dr. Rumana Hasan Sharmi
15. Health-related quality of life among the patients with ischemic heart disease. Dr. Shabita Mandal

Thesis topics of the students of MPH (Community Nutrition)

1. National status of under-five children suffering from oral health problems attending OPD of Dhaka Dental College and Marks Dental College & Hospital. Dr. Nabhira Aftabi Binte Islam

2. Comparison of national status among breast and artificially-fed under 2 year children in a selected community. Dr. Rupa Baidya
3. Knowledge about food safety among buyers and sellers in a municipality market. Dr. Nazmus Salehin
4. Relationship between national status of lactating mother and their infants. Sultana Esrat Jahan
5. Household food security and nutritional status of the tobacco cultivators. Dr. Md. Ruhul Amin

Thesis topics of the students of MPH (Epidemiology)

1. Stress and body mass index in adolescent students. Dr. Rebeka Razzaque
2. Association between betel quid-chewing and metabolic syndrome. Dr. Dipon Dey
3. Influence of second-hand smoke exposure at home on acute respiratory conditions of under-five children. Dr. Kishor Kumar Paul
4. Socio-economic and cultural influence on burn injuries in children attending tertiary hospitals. Dr. Golam Md. Moin Uddin
5. Performance of obesity indicators in predicting coronary heart disease. Dr. Fatema Mahjabin Hossain
6. Approach of smokers to the tobacco law and their smoking habits among university students. Dr. Shah Halimur Rashid
7. Association between social relations and depressive symptoms in infertile women. Dr. Faria Sharmin
8. Association of maternal mental health with child nutritional status. Dr. Ahad Mahmud Khan
9. Gender and locality differences in the discrimination among senior citizens. Dr. Shaheen Ahmed
10. Association between dietary patterns and kidney function indicators in type 2 diabetes mellitus. Dr. Mohammad Moazzem Hossain
11. Quality of life between percutaneous coronary intervention and coronary artery bypass graft patients. Dr. (Major) Ashiqur Rahman
12. Role of social support in depressive symptoms following myocardial infarction. Dr. Rownok Jahan
13. Emotional well-being and coping support in mothers of children with autism spectrum disorders.Dr. Sadia Sobhan Pinki
14. Functional assessment of cervical cancer therapy patients.Dr. Nazrana Islam Jui
15. Anthropometric indices in patients with low backpain. Dr. Md. Ashfaqur Rahman
16. Blood pressure and behavioural risk factors in Rakhain community. Dr. Ranjan Barua Rajan
17. Assessment of community clinics in Cox's Bazar district. Dr. Arafatur Rahman
18. Determinants of women's participation in cervical cancer screening program. Dr. Jeenat Maitry
19. Factors for delayed treatment among type 2 diabetic foot ulcer patients. Dr. Pronab Kumar Modak

Thesis topics of the students of MPH (Health Education)

1. Educational intervention on disaster management among the dental students. Dilruba Rahman
2. Knowledge on breast self-examination among the university female students. A.S.M. Ishtiak
3. Knowledge and practice on oral health among the high school students in a rural community. Sudipa Biswas
4. Quality of life among the street children in Dhaka metropolitan city. Kazi Rabeya Naznin
5. Knowledge on autism among the young adult women in a selected community. Chhanda Saha
6. Ethics in surgical interventions in the medical college hospitals. Elora Hossain
7. Knowledge on healthy school environment among the primary school teachers in urban community. Dipangkor Podder
8. Health literacy and behavior related to non-communicable diseases among the higher secondary students. Zahidur Rahim
9. Opinion on health SMS among the healthcare recipients. Farzana Hossain
10. Knowledge on prevention of tuberculosis among patients'attendance in urban community. Hasan Mohammad Saifur Rahman
11. Counseling on oral hygiene among the patients by the dental practitioners in Dhaka city. Sujan Kanti Nath
12. Screening of chronic kidney disease patients among adult population in a selected hospital. Zebunnesa Zeba

13. Knowledge on food-borne diseases among the food-handlers in urban community. Md. Ashraful Hoque
14. Health literacy status among the university students. Md. Shirajul Islam
15. Knowledge on complications of diabetes mellitus among the senior citizen in an urban community. Shamima Nasrin
16. Educational intervention on cervical cancer among the nursing students in selected nursing institutes. Sahida Akter
17. Knowledge regarding reproductive health among the secondary school students in an urban community. Akbori Khanum
18. Treatment compliance of hypertensive patients. Malina Mazumder
19. Knowledge on sexually transmitted infections among the garment workers in selected garment factories. Shahana Yeasmin
20. Knowledge on risk factors of low birth-weight among the women of reproductive age in a rural community. Karuna Halder
21. Knowledge on post-menopausal syndrome among the pre-menopausal women in selected community. Dillroba Easmen
22. Education intervention on palliative nursing care among the nursing students in selected institutes. Jesmin Sultana
23. Quality of life among the post-operative cardiac patients attending in outpatient department of hospitals in Dhaka City. Roma Begum
24. Intestinal helminthiasis among the under-5 children and practice about personal hygiene in selected urban community. Most. Nasima Shaheen
25. Health literacy status among the madrasha students in a rural community. Asif Mahmud
26. Clients' participation in monitoring hospital services through SMS-based complaints and suggestions. Sheikh Mohammad Masudul Haque
27. Educational intervention on healthy diet among the high school students in a rural community. Mokarima Khatun

Thesis topics of the students of MPH (OEH)

1. Occupational accident and psychosocial stress among readymade workforce in Dhaka city. Dr. Laizun Nahar
2. Health and safety of women workers in a selected readymade garments factory. Dr. Ishrat Hossain
3. Occupational stress of the nurses in a specialized hospital in Dhaka city. Dr. K.H.M Watin Alam
4. Social dimension of arsenicosis patients in a selected arsenic-prone area in Bangladesh. Dr. Sabbir Ahmed
5. Awareness of people under community-based adaption program about the health risk of climate change. Dr. Harun-Ul-Morshed
6. Respiraory health problems and spirometric abnormalities among the workers of stone crushing industries. Dr. A.N.M. Ehtesham Kabir
7. Food security and nutritional status of underfive children in a climate vulnerable area of Bangladesh. Dr. Md. Monirul Hoque
8. Medical waste management practices in a selected secondary level hospital. Dr. Mohammad Ferdous Rahman Sarker

Thesis topics of the students of MPH (MCH)

1. Determinants of caesarean section and clients satisfaction. Dr. Khadiza Akter
2. Eve teasing and adolescent depression. Dr. Jinnatul Airin
3. Maternal and neonatal factors of newborn sepsis. Dr. Humyarara Sultana
4. Household food security and fertility pattern among rural mothers. Dr. Nabeela Mazid
5. Sexually transmitted infections patients and It's treatment compliance. Dr. Md.Mizanur Rahman
6. Pregnancy complications of working mothers and their outcomes. Dr. Taslima Akber Happy
7. Gynecological health problems of post-menopausal women and their healthcare seeking behavior in rural community. Dr. Husneara Begam
8. Drug abuse of street children and their social and health consequences. Dr. Asim Kumar Saha
9. Reproductive health problems of tribal women and their healthcare-seeking behavior. Dr. Shah Niaz Md. Rubaid Anwar
10. Violence against women and their consequences among the female patients admitted in burn unit of Dhaka Medical College Hospital. Mst. Saleha Khatun

11. Rural mothers' awareness on reproductive health needs and care of their adolescent girls. Mst. Yamin Ara Khatun
12. Depression among genitourinary prolapsed patient. Dr. Major Riffat Zaman
13. Breast cancer and knowledge on self-examination of breast among the female nurses: a comparative study. Mst. Rafiza Khatun
14. Unmet need of family planning and fertility patternamong refugee women of Cox's Bazar. Karuna Rani Bepari
15. Adolescent pregnancy and use of family planning methods in coastal area. Bijoli Rani Roy
16. Pregnant women access to demand-side financing of reproductive healthcare and their maternal and neonatal outcome. Dr. Rafia Akhter
17. Maternal determinants of giving low-birthweight neonates and their outcomes. Dr. Nasrin Akter
18. Client access to RCH service provided through community clinic and their satisfaction. Dr. Md. Mosheur Rahaman Chowdhury
19. Fertility pattern and nutritional status of women of coastal area. Dr. Nuruzzaman
20. Age at first pregnancy and carcinoma cervix. Dr. Khandoker Kashfia Sultana

Thesis topics of the students of MPhil

1. Psychosocial sickness among the drug abusers undergoing detoxification. Dr. Bushra Zaman
2. Adherence to highly-active antiretroviral therapy in people living with HIV/AIDS. Dr. Khondoker Hasina Sultana
3. Congruence of quality of life and distress among infertile men and women: a couple-based study. Dr. Hasina Mamtaz
4. Financial burden and coping strategy of childhood cancer. Dr. Shafiqul Islam
5. Occupational stress in health professionals of selected combined military hospitals. Dr. Umar Rashed Munir
6. Unmet dental need and oral health-related quality of life among the university students. Dr. Md. Shahedul Haque Siddique

Annex to Chapter 16

Division-wise distribution of sanctioned, filled-up and vacant posts under the DGHS (December 2013)

Division	Class		Sanctioned	Filled-up				Vacant	
				Male	Female	Total	Filled-up as % of sanctioned posts	No.	Vacant as % of sanctioned posts
Barisal	Class I	Doctors	1537	580	140	720	46.84	817	53.16
		Non-doctors	25	8	1	9	36.00	16	64.00
	Class II		1680	82	1422	1504	89.52	176	10.48
	Class III		4079	2128	1091	3219	78.92	860	21.08
	Class IV		1883	1089	329	1418	75.31	465	24.69
	Total		9204	3887	2983	6870	74.64	2334	25.36
Chittagong	Class I	Doctors	3871	2024	610	2634	68.04	1237	31.96
		Non-doctors	60	18	0	18	30.00	42	70.00
	Class II		3233	241	2721	2962	91.62	271	8.38
	Class III		10093	5719	1958	7677	76.06	2416	23.94
	Class IV		4446	2613	828	3441	77.40	1005	22.60
	Total		21703	10615	6117	16732	77.10	4971	22.90
Dhaka	Class I	Doctors	9041	5160	1998	7158	79.17	1883	20.83
		Non-doctors	272	113	34	147	54.04	125	45.96
	Class II		7980	554	6951	7505	94.05	475	5.95
	Class III		16463	9538	3715	13253	80.50	3210	19.50
	Class IV		10864	6194	2189	8383	77.16	2481	22.84
	Total		44620	21559	14887	36446	81.68	8174	18.32
Khulna	Class I	Doctors	2254	936	271	1207	53.55	1047	46.45
		Non-doctors	45	17	4	21	46.67	24	53.33
	Class II		1865	85	1737	1822	97.69	43	2.31
	Class III		5924	3163	1338	4501	75.98	1423	24.02
	Class IV		2540	1402	591	1993	78.46	547	21.54
	Total		12628	5603	3941	9544	75.58	3084	24.42
Rajshahi	Class I	Doctors	2659	1306	421	1727	64.95	932	35.05
		Non-doctors	53	17	5	22	41.51	31	58.49
	Class II		2492	185	2172	2357	94.58	135	5.42
	Class III		6752	4535	1225	5760	85.31	992	14.69
	Class IV		3674	2174	748	2922	79.53	752	20.47
	Total		15630	8217	4571	12788	81.82	2842	18.18
Rangpur	Class I	Doctors	2217	921	283	1204	54.31	1013	45.69
		Non-doctors	37	9	2	11	29.73	26	70.27
	Class II		1942	105	1616	1721	88.62	221	11.38
	Class III		5552	3550	855	4405	79.34	1147	20.66
	Class IV		2524	1512	526	2038	80.74	486	19.26
	Total		12272	6097	3282	9379	76.43	2893	23.57

Table continued

Division	Class		Sanctioned	Filled-up				Vacant	
				Male	Female	Total	Filled-up as % of sanctioned posts	No.	Vacant as % of sanctioned posts
Sylhet	Class I	Doctors	1403	644	166	810	57.73	593	42.27
		Non-doctors	22	3	0	3	13.64	19	86.36
	Class II		1240	85	979	1064	85.81	176	14.19
	Class III		3614	2078	567	2645	73.19	969	26.81
	Class IV		1796	1074	392	1466	81.63	330	18.37
	Total		8075	3884	2104	5988	74.15	2087	25.85
Grand total			124132	59862	37885	97747	78.74	26385	21.26
Seven divisions	Class I	Doctors	22982	11571	3889	15460	67.27	7522	32.73
		Non-doctors	514	185	46	231	44.94	283	55.06
	Class II		20432	1337	17598	18935	92.67	1497	7.33
	Class III		52477	30711	10749	41460	79.01	11017	20.99
	Class IV		27727	16058	5603	21661	78.12	6066	21.88
	Total		124132	59862	37885	97747	78.74	26385	21.26

Institutions offering postgraduate medical courses and titles of courses, with the number of seats in each course (December 2013)

Name of institution	MS	MD	M. Phil	Diploma	MPH	MTM	MMED	Total
Government (autonomous) (No. of institutions: 1)								
Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka	140	150	70	106	0	10	0	476
Total	**140**	**150**	**70**	**106**	**0**	**10**	**0**	**476**
Government (No. of institutions: 22)								
Centre for Medical Education (CME), Mohakhali, Dhaka	0	0	0	0	0	0	15	15
Chittagong Medical College, Chittagong	37	48	29	48	03	0	0	165
Dhaka Dental College, Mirpur 14, Dhaka	22	0	0	0	0	0	0	22
Dhaka Medical College, Dhaka	70	110	86	82	06	0	0	354
Institute of Child & Mother Health (ICMH), Matuail, Dhaka	10	10	0	30	0	0	0	50
Institute of Nuclear Medicine and Ultrasound, Block D, BSMMU Campus, Shahbag, Dhaka	0	0	0	10	0	0	0	10
Mymensingh Medical College, Mymensingh	22	40	33	59	0	0	0	154
National Institute of Cancer Research and Hospital, Mohakhali, Dhaka	06	12	0	0	0	0	0	18
National Institute of Cardiovascular Diseases (NICVD), Sher-e-Bangla Nagar, Dhaka	20	20	0	14	0	0	0	54
National Institute of Chest Diseases and Hospital (NIDCH), Mohakhali, Dhaka	06	15	0	20	0	0	0	41
National Institute of Child Health, Sher-e-Bangla Nagar, Dhaka	10	15	0	15	0	0	0	40
National Institute of Kidney Diseases and Urology (NIKDU), Sher-e-Bangla Nagar, Dhaka	06	09	0	0	0	0	0	15
National Institute of Mental Health, Sher-e-Bangla Nagar, Dhaka	0	06	0	0	0	0	0	06
National Institute of Ophthalmology, Sher-e-Bangla Nagar, Dhaka	10	0	0	10	0	0	0	20
National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka	0	0	07	0	166	0	0	173
National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Sher-e-Bangla Nagar, Dhaka	30	0	0	15	0	0	0	45
Rajshahi Medical College, Rajshahi	10	19	25	41	05	0	0	100

Table continued

Name of institution	MS	MD	M. Phil	Diploma	MPH	MTM	MMED	Total
Rangpur Medical College, Rangpur	08	08	08	22	0	0	0	46
SZR Medical College, Bogra	0	0	0	10	0	0	0	10
Sher-e-Bangla Medical College, Barisal	04	0	08	22	0	0	0	34
Sir Salimullah Medical College, Dhaka	21	36	18	40	05	0	0	120
M.A.G Osmani Medical College, Sylhet	20	12	28	40	0	0	0	100
Total	**312**	**360**	**242**	**478**	**185**	**0**	**15**	**1592**
Private (No. of institutions: 10)								
Bangladesh College of Physicians and Surgeons, Mohakhali, Dhaka*	-	-	-	-	-	-	-	-
Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM), Shahbag, Dhaka	10	22	15	14	0	0	0	61
Chittagong Maa O Shishu & General Hospital. Agrabad, Chittagong	0	0	0	06	0	0	0	06
Institute of Child Health and Shishu (Children) Hospital, Shishu Shasthya Foundation, Bangladesh , Mirpur 2, Dhaka	0	0	0	06	0	0	0	06
Institute of Community Ophthalmology, Chittagong	0	0	0	08	0	0	0	08
Institute of Health Sciences (under USTC), Foy's Lake, Chittagong	0	05	0	45	0	0	0	50
Lions Eye Institute and Hospital, Lions Bhaban, RokeyaSarani, Agargaon, Dhaka	0	0	0	06	0	0	0	06
Mirza Ahmed Ispahani Institute of Ophthalmology and Islamia Hospital, Sher-e-Bangla Nagar, Dhaka	0	0	0	10	0	0	0	10
National Heart Foundation, Mirpur 2, Dhaka	05	05	0	0	0	0	0	10
United Hospital Ltd. Gulshan 2, Dhaka	06	06	0	0	0	0	0	12
Total	**21**	**38**	**15**	**95**	**0**	**0**	**0**	**169**
Grand total (No. of institutions: 33)								
Grand total (no. of seats)	**473**	**473**	**327**	**327**	**327**	**25**		**2237**

*Offers FCPS and MCPS courses. Number of seats are not fixed and not included in this count

Number of fellowships and memberships offered by Bangladesh College of Physicians and Surgeons in various disciplines from 2013

Discipline	FCPS	MCPS
Anesthesiology	5	1
Biochemistry	0	0
Cardiology	2	0
Clinical Pathology	7	5
Conservative Dentistry	2	0
Dental Surgery	0	3
Dermatology & Venereology	9	9
Family Medicine	0	1
Forensic Medicine	0	0
Gastroenterology	1	0
Hematology	4	0
Histopathology	1	0
Medicine	78	9
Microbiology	3	0
Neonatology	1	0
Obstetrics & Gynecology	112	33

Table continued

Discipline	FCPS	MCPS
Ophthalmology	17	0
Oral & Maxilla-Facial Surgery	7	0
Orthodontics &DentosFacial Orthopedic	7	0
Otolaryngology	14	2
Pediatric Surgery	0	0
Pediatrics	52	4
Physical Medicine & Rehabilitation	9	0
Prosthodontics	0	0
Psychiatry	6	3
Pulmonology	1	0
Radiology & Imaging	2	5
Radiotherapy	3	1
Surgery	35	3
Thoracic Surgery	0	0
Urology	1	0
Plastic and Reconstructive Surgery	5	0
Total	384	79

Government institutions offering MBBS degrees, with number of seats (July 2014)

Serial No	Name of college	Year of establishment	No. of seats as of 2014
1	Dhaka Medical College, Dhaka	1948	197
2	Mymensing Medical College, Mymensing	1962	197
3	Chittagong Medical College, Chittagong	1962	197
4	Rajshahi Medical College, Rajshahi	1962	197
5	M.A. G. Osmani Medical College, Sylhet	1966	197
6	Sher-e-Bangla Medical College, Barisal	1968	197
7	Rangpur Medical College, Rangpur	1972	197
8	Sir Salimullah Medical College, Mitford, Dhaka	1972	197
9	Comilla Medical College, Comilla	1992	114
10	Khulna Medical College, Khulna	1992	142
11	ShaheedZiaur Rahman Medical College, Bogra	1992	142
12	Faridpur Medical College, Faridpur	1992	114
13	Dinajpur Medical College, Dinajpur.	1992	142
14	ShaheedSuhrawardy Medical College, Sher-e-Bagla Nagar, Dhaka	2005	142
15	Pabna Medical College, Pabna.	2008	58
16	Noakhali Medical College, Noakhali.	2008	58
17	Cox's Bazar Medical College, Cox's Bazar	2008	58
18	Jessore Medical College	2010	58
19.	Satkhira Medical College	2011	52
20	Shohid Syed Nazrul Islam Medical College, Kishoreganj	2011	52
21	Kushtia Medical College. Kushtia	2011	52
22	Shaikh Shahera Khatun Medical College. Gopalganj	2011	52
23	Gazipur Medical College. Gazipur.	2013	52
24	Tangail Medical College. Tangail.	2014	52

Table continued

Serial No	Name of college	Year of establishment	No. of seats as of 2014
25	Shirgajgonj Medical College, Shirgajgonj.	2014	52
26	Manikgonj Medical College, Manikgonj.	2014	52
27	Jamalpur Medical College, Jamalpur.	2014	52
28	Patuakhali Medical College, Patuakhali.	2014	52
29	Rangamati Medical College, Rangamati.	2014	52
30	Armed Forces Medical College, Dhaka	1999	100
31	Army Medical College, Bogra	2014	100
32	Army Medical College, Chittagong	2014	100
33	Army Medical College, Comilla	2014	100
34	Army Medical College, Jessore	2014	100
35	Army Medical College, Rangpur	2014	100
		Total	**3776**

Private institutions offering MBBS degree, with the number of seats (July 2014)

Serial No	Code no.	Name of college	No. of seats	Year of establishment
01	41	Bangladesh Medical College, Road # 14/A, Dhanmondi, Dhaka	110	1985
02	42	SamajVittic Medical College, Mirza Nagar, Via Savar Cant., Dhaka	100	1989
03	43	Institute of Applied Health Sciences, Foy's lake, Chittagong	200	1990
04	44	Jahurul Islam Medical College, Bajitpur, Kishoreganj	100	1992
05	45	Medical College for Women & Hop, Rd # 8-9 Set-1, Uttara Model Town, Dhaka	80	1992
06	46	Z.H. Sikder, Women Medical College, Monica Estate, Western Dhanmondi, Dhaka	90	1992
07	47	Dhaka National Medical College, 53/1 Jonson Road, Dhaka	125	1995
08	48	Community Based Medical College, 161 K.B.Ismail Road, Mymenshingh	120	1995
09	49	Jalalabad Ragib-Rabeya Medical College, Pathantola, Sylhet	160	1996
10	50	Shaheed Monsur Ali Medical College, Plot # 26, Rd# 10, St-11, Uttara, Dhaka	95	1998
11	51	North East Medical College, South Surma, Sylhet	115	1998
12	52	Holy Family Red Cressent Medical College, 1 Eskaton Garden Road, Dhaka	120	2000
13	53	International Medical College, Sataish Bazar, Gushuli, Tongi, Gazipur	110	2000
14	54	North Bengal Medical College, JC Road, Dhanbandi, Sirajganj	60	2000
15	55	East West Medical College, Aichi Nagar, JBCS Sarani, Horirampur Turag, Dhaka	100	2000
16	56	Kumudini Medical College, Mirzapur, Tangail	110	2001
17	57	Tairunnessa Medical College,Targas, Kunia, Board Bazar, Gazipur	85	2001
18	58	Ibrahim Medical College, Ibrahim Sarani, Segun Bagicha, Dhaka	110	2002
19	59	BGC Trust Medical College, Kanchannagar, Chandanaish, Chittagong	100	2002
20	60	Shahabuddin Medical College, Rd. # 113/A, Plot # 12, Gulshan Model Town, Dhaka	85	2003
21	61	Enam Medical College, Parbatinagar, Thana Road, Savar, Dhaka	120	2003
22	62	Islami Bank Medical College, Nowdapara, Safura, Airport Road, Rajshahi	75	2004
23	63	IBN Sina Medical College, H # 48, Rd # 9/A, Satmoshjid Rd., Dhanmondi, Dhaka	65	2005
24	64	Central Medical College, Comilla Tower, Laksham Road, Comilla	65	2005
25	65	Eastern Medical College, Race Course, Comilla	85	2005
26	66	Khawja Eunus Medical College, Enayetpur, Sirajganj	95	2005
27	67	Chottogram Ma O Shishu Medical College, Agrabad, Chottogram 4100	90	2006
28	68	Sylhet Women Medical College, Mirbox Tolla, Sylhet	90	2006
29	69	Nightingle Medical College, Ashulia, Sarker Market, Dhaka	50	2006
30	70	Southern Medical College, Mozaffor Ahmed Chy Rd., East Nasirabad, Chittagong	70	2006
31	71	Northern International Medical College, House # 81, Rd. # 7, Dhanmondi, Dhaka	60	2006

Table continued

Serial No	Code no.	Name of college	No. of seats	Year of establishment
32	72	Uttara Adhunik Medical College, Uttara, Dhaka	80	2007
33	73	Delta Medical College, Mirpur, Dhaka	75	2008
34	74	Addin Women Medical College, 2- Boro Mogbazar, Dhaka	75	2008
35	75	Dhaka Community Medical College, 190 Boro Mogbazar, Dhaka	90	2008
36	76	TMSS Medical College. Bogra	100	2008
37	77	Anwar Khan Modern Medical College, Dhanmandi, Dhaka	90	2008
38	78	Prime Medical College, Pirjabad, Rangpur	120	2008
39	79	Rangpur Community Hospital Medical College, Medical East Gate, Rangpur	120	2008
40	80	Northern Private Medical College, Dhap, Chiklibata Burirhat Road, Rangpur	70	2006
41	81	Faridpur Diabetic Association Medical College, Ziltuli, Faridpur	60	2010
42	82	Green Life Medical College, Dhanmondi, Dhaka	90	2010
43	83	Popular Medical College, Road # 02, House # 25, Dhanmondi, Dhaka	75	2010
44	84	MH Shamarita Medical College, 13/A & 89/1 PanthaPath, Dhaka 1215	75	2011
45	85	Moonno Medical College, Manikganj	70	2011
46	86	Central International Medical College, 2/1 Ring Road, Shyamoli, Dhaka	70	2011
47	87	Dr. Sirajul Islam Medical College, Mogbazar, Dhaka	70	2011
48	88	Marks Medical College, Mirpur, Dhaka	50	2011
49	89	Moinamoti Medical College, Baropara, Comilla	70	2012
50	90	Ad-din-Sakina Medical College, 15, Rail Road, Jessore	50	2012
51	91	Gazi Medical College, Sonadanga, Khulna	75	2012
52	92	Barind Medical College, Shershah Road, Laksumpur, Rajshahi	65	2012
53	93	City Medical College, Eta Hata, Block-B, Tangail Road, Gazipur	70	2012
54	94	Ashiyan M.C,Unicon Plaza (4-6th Floor) 4212,North Avenue, Gulshan-2	50	2012
55		Abdul Hamid M.C, Kishorgonj (New)	50	2014
		Total	4850	-

Government institutions offering BDS degree, with the number of seats (December 2013)

Serial No	Name of college	Established	Seats
01	Dhaka Dental College, Mirpur14, Dhaka	1960	97
02	Chittagong Medical College Dental Unit, Chittagong	1990	60
03	Rajshahi Medical College Dental Unit, Rajshahi	1989	59
05	Shahid Suhrawardhy Medical College Dental Unit, Dhaka	2012	56
04	Sir Salimullah Medical College Dental Unit, Dhaka	2012	52
06	Mymensingh Medical College Dental Unit, Mymensingh	2012	52
07	M.A.G. Osmani Medical College Dental Unit, Sylhet	2012	52
08	Sher-e-Bangla Medical College Dental Unit, Barishal	2012	52
09	Rangpur Medical College Dental Unit, Rangpur	2012	52
		Total	**532**

Private institutions offering BDS degree, with the number of seats (December 2013)

Serial No	Code no.	Name of college	No. of seats	Year of establishment
01	21	Pioneer Dental College, 111, Malibag, DIT Road, Dhaka	90	1995
02	22	City Dental College, 1085/1 Malibag Chowdhury Para, Dhaka	75	1998

Table continued

Serial No	Code no.	Name of college	No. of seats	Year of establishment
03	23	University Dental College, 120 Siddeswari Outer Circular Road, Century Arcade, Mogbazar, Dhaka	85	1996
04	24	Bangladesh Dental College, Road # 14/A, Dhanmondi, Dhaka	70	1997
05	25	Sapporo Dental College, Plot-12, Road-1/B, Sector-9, Uttara Model Town, Dhaka	80	2000
06	26	Rangpur Dental College, Medical East gate, Rangpur	100	2008
07	27	Chittagong International Dental College, 206/1, Hazi Chandmia Road, Samsherpara, Chandgaon, Chittagong	50	2005
08	28	SamajVittik Dental College, Miza Nagar, Via Savar Cant, Dhaka	50	1997
09	29	Marks Dental College, A/3 Main Road, Section 14, Mirpur, Dhaka	50	2008
10	30	Update Dental College, 162, Atish Dipankar Road, West Mugdha, Dhaka	70	2008
11	31	Udayan Dental College, Rajshahi	50	2008
12	32	Shaphena Dental College, Boro Mogbazar, Dhaka	75	2010
13	33	Mandi Dental College, 295/jha/14 Sikdar Real Estate, Dhanmondi (West), PS-Hazaribag, Dhaka 1209	55	2010
14	34	MH Shamarita Medical College Dental Unit. 13/A & 89/1 PanthaPath, Dhaka1215	50	2010
15	35	Kumudini Medical College Dental Unit, Mirzapur, Tangail	25	2011
16	36	Holy Family Red Crescent Medical College, 1 Eskaton Garden Road, Dhaka	30	2012
17	36	TMSS-Bogra Medical College Dental Unit, Bogra	30	2011
18	37	Community Medical College Dental Unit, 190 Boro Mogbazar, Dhaka	30	2012
		Total	**1065**	

Government nursing colleges offering four-year Basic BSc nursing course (December 2013)

Division	Name of nursing college	Degree	No. of seats
	Under the Ministry of Health and Family Welfare		
Chittagong	College of Nursing, Chittagong Medical College, Chittagong	BSc Nursing	100
Dhaka	College of Nursing, Dhaka Medical College Hospital, Dhaka	BSc	100
	College of Nursing, Mymensingh Medical College, Mymensingh	BSc	100
Rajshahi	College of Nursing, Rajshahi Medical College, Rajshahi	BSc	100
Rangpur	College of Nursing, Rangpur Medical College, Rangpur	BSc	100
Sylhet	College of Nursing, M.A.G. Osmani Medical College, Sylhet	BSc	100
Barisal	College of Nursing, Sher-e-Bangla Medical College, Barisal	BSc	100
Total no. of nursing colleges under MOHFW=7		**Total seats**	**700**
Dhaka	Armed Forces Medical Institute, Dhaka Cantonment, Dhaka	BSc	60
	Faculty of Nursing, BSMMU, Dhaka		25
Total no. of nursing colleges under the Ministry of Defense=1		**Total seats**	**60**
Total no. of nursing colleges in the government sector=8		**Grand total**	**785**

Government Post-basic B.Sc nursing colleges (December 2012)

Division	Name of institution	Degree	No. of seats
	Under the Ministry of Health and Family Welfare		
Dhaka	Nursing College, Mohakhali, Dhaka	Post-basic BSc	125
Chittagong	Foujderhat Nursing College, Chittagong	Post-basic BSc	125
Rajshahi	Bogra Nursing College, Bogra	Post-basic BSc	125
Khulna	Khulna Nursing College, Khulna	Post-basic BSc	125
Total no. of Post-basic BSc nursing colleges=4		**Total seats**	**500**

Private nursing colleges offering Post-basic B.Sc Nursing degree (December 2013)

Division	Name of nursing college	No. of seats
Dhaka	East West Nursing College, Turag, Dhaka	35
	Kumudini Nursing College, Kumudini Hospital, Tangail	25
	Faculty of Nursing, City University, Banani, Dhaka (no admission)	-
	Square Nursing College, Square Hospital, Dhaka (Closed now)	-
	State College of Health Sciences, Dhanmondi, Dhaka	30
	United College of Nursing, Gulshan, Dhaka	20
	BIRDEM Nursing College, 122 Kazi Nazrul Islam Avenue, Shahbag, Dhaka	50
	TMMC Nursing College, Targas, Board Bazar, Gazipur	25
	Prime Bank Nursing College, Kuril Biswa Road, Dhaka.	20
	Green life Nursing College, Green Road, Dhaka.	30
Rajshahi	TMSS Nursing College, Thengamara, Bogra	30
	Khaza Younus Ali Nursing College, Enaetpur, Sirajganj.	50
Sylhet	North East Nursing College, Telihaor, Sylhet	25
	Begum Rabeya Khatun Chowdhury Nursing, College, Sylhet	30
Rangpur	Prime Nursing College, Rangpur	50
Total no. of colleges=15	**Total seats**	**480**

Private nursing colleges offering Basic B.Sc Nursing degree (December 2013)

Division	Name of nursing college	No. of seats
Dhaka	State College of Health Science, Dhaka	30
	United College of Nursing, Gulshan , Dhaka	40
	East West Nursing College, Turag, Dhaka	35
	International Medical College, Gazipur	20
	Kumudini Nursing College, Mirzapur, Tangail	25
	TMMC Nursing College, Targas, Board Bazar, Gazipur	25
	BIRDEMNursing College, 122 KaziNazrul Islam Avenue, Shahbag, Dhaka	50
	CRP Nursing College, Chapain, Savar, Dhaka	40
	Square Nursing College, Square Hospital, Dhaka (Closed now)	50
Rajshahi	TMSS Nursing College, Thengamara, Bogra	25
Sylhet	North East Nursing College, Telihaor, Sylhet	25
	Begum RabeyaKhatun Chowdhury Nursing College, Sylhet	25
Rangpur	Prime Nursing College, Rangpur	50
Total=13	**Total seats**	**440**

Private institutions offering specialized nursing courses (December 2013)

Division	Name of nursing college	No. of seats
Dhaka	Cardiac Nursing, National Heart Foundation, Mirpur, Dhaka	20
	Cardiac Nursing, Ibrahim Cardiac Hospital, Shahbag, Dhaka	20
	Pediatric Nursing, Dhaka Shishu Hospital, Dhaka	20
Rangpur	Cardiac Nursing, Institute of Nursing Science, Dinajpur, (Zia Heart Foundation)	20
Total no. of institutions in the private sector=4	**Total seats**	**80**

Government nursing institutions, with number of seats (December 2013)

Division	Name of institution	No. of seats
	Nursing institutions attached with medical college hospitals	
Chittagong	1. Nursing institutions attached with Comilla Medical College Hospital, Comilla	80
Dhaka	2. Nursing institutions attached with Faridpur Medical College Hospital, Faridpur	80
	3. Nursing institutions attached with SSMC Hospital, Mitford, Dhaka	80
	Total	**240**
	Nursing institutions attached with general hospitals	
Barisal	1. Nursing institutions attached with Patuakhali General Hospital	80
Chittagong	2. Nursing institutions attached with Noakhali General Hospital	80
	3. Nursing institutions attached with Rangamati General Hospital	80
Dhaka	4. Nursing institutions attached with Tangail General Hospital	80
Khulna	5. Nursing institutions attached with Jessore General Hospital	80
	6. Nursing institutions attached with Khulna General Hospital	80
	7. Nursing institutions attached with Kushtia General Hospital	80
Rajshahi	8. Nursing institutions attached with Mohammad Ali Hospital, Bogra	80
	9. Nursing institutions attached with Dinajpur General Hospital	80
	10. Nursing Institutions attached with Pabna General Hospital	80
	11. Nursing institutions attached with Sirajganj General Hospital	50
	Total	**850**
	Nursing institutions attached with district hospitals	50
Barisal	1. Nursing institutions attached with Bhola District Hospital	50
	2. Nursing institutions attached with Pirojpuri District Hospital	50
	3. Nursing institutions attached with Barguna District Hospital	70
Chittagong	4. Nursing institutions attached with Brahmanbaria District Hospital	50
	5. Nursing institutions attached with Cox's Bazar District Hospital	50
	6. Nursing institutions attached with Feni District Hospital	50
	7. Nursing institutions attached with Chandpur District Hospital	50
Dhaka	8. Nursing institutions attached with Munshiganj District Hospital	50
	9. Nursing institutions attached with Netrakona District Hospital	50
	10. Nursing institutions attached with Rajbari District Hospital	50
	11. Nursing institutions attached with Gopalganj District Hospital	50
	12. Nursing institutions attached with Madaripu District Hospital	50
	13. Nursing institutions attached with Jamalpur District Hospital	50
	14. Nursing institutions attached with Kishoreganj District Hospital	50
	15. Nursing institutions attached with Sherpur District Hospital	50
Khulna	16. Nursing institutions attached with Bagerhat District Hospital	50
	17. Nursing institutions attached with Chuadanga District Hospital	50
	18. Nursing institutions attached with Magura District Hospital	50
	19. Nursing institutions attached with SatkhiraDistrict Hospital	50
	20. Nursing institutions attached with Jhenaidah District Hospital	50
Rajshahi	21. Nursing institutions attached with Chapainowabganj District Hospital	50
	22. Nursing institutions attached with Joypurhat District Hospital	50
	23. Nursing institutions attached with Naogaon District Hospital	
Sylhet	24. Nursing institutions attached with Maulvibazar District Hospital	50
	25. Nursing institutions attached with Habiganj District Hospital	50

Table continued

Division	Name of institution	No. of seats
Rangpur	26. Nursing institutions attached with Kurigram District Hospital	50
	27. Nursing institutions attached with Thakurgaon District Hospital	50
	28. Nursing institutions attached with Nilphamari District Hospital	50
	29. Nursing institutions attached with Panchagarh District Hospital	50
	Total seats	**1490**
	Grand total	**2580**

Private nursing institutions, with the number of seats (December 2013)

Division	Name of nursing institution	No. of seats
Chittagong	1. Nursing Institute, Christian Hospital, Chondroghona	30
	2. Jemison Red Crescent Nursing Institute, 395 Andorkillah, Chittagong	50
	3. Nursing Institute, Chottogram Ma O Shishu Hospital, Agrabad, Chittagong	25
	4. Comilla Diabetic Hospital Nursing Institute, Comilla	40
	5. Begum Osman Ara College of Nursing, (BGC Trust), Chandanaish, Chittagong	50
	6. Christian Mission Hospital, Chandraghona.	30
Dhaka	7. Fatima Nursing Institute, Mogbazar, Dhaka	50
	8. Kumudini Nursing School, Mirzapur, Tangail	50
	9. Christian Health Project Nursing Institute, Joyramkura, Haluaghat, Mymensingh	20
	10. CRP Nursing Institute, Savar, Dhaka	50
	11. Diabetic Association Nursing Institute, Jhiltuli, Faridpur	40
	12. B.A. Siddiqui Nursing Institute, Holy Family Red Crescent Medical College Hospital, Mogbazar, Dhaka	50
	13. Jahurul Islam Nursing Institute, Bajitpur, Kishoreganj	50
	14. Munnu Nursing Institute, Manikganj	40
	15. Prime Bank Nursing Institute, Kuril Bishwaroad, Dhaka	40
	16. Japan-Bangladesh Friendship Nursing Institute, Mirpur, Dhaka	60
	17. Central Hospital Nursing Institute, Green Road, Dhanmondi, Dhaka	50
	18. Nursing Institute, ShishuShaasthya Foundation Hospital, Mirpur, Dhaka	20
	19. Nursing Institute, Medical College for Women and Hospital, Uttara, Dhaka	25
	20. TMMC Nursing Institute, Targas, Board Bazar, Gazipur	50
	21. Green Life Hospital Nursing Institute, Dhanmondi, Dhaka	40
	22. ShaheedMonsur Ali Nursing Institute, Uttara, Dhaka	40
	23. Dhaka Community Nursing Institute, Wireless Gate, Mogbazer, Dhaka	30
	24. Community Based Nursing Institute, Mymensingh	50
	25. East West Nursing Institute, Turag, Dhaka	50
	26. GraminCalidunian College of Nursing, Mirpur, Dhaka	50
	27. IBN Sina Nursing Institute , Kalyanpur, Dhaka	70
	28. CHPN. 1. Joyramkura, Haluaghat, Mymensingh	20
	29. Anowar Khan Modrern, College, Road-8, Dhanmondi	50
	30. Universal Nursing Inst., Mohakhali, Dhaka.	25
	31. Kalihati Nursing Inst., Kalihati, Tangail.	50
	32. Scolars Nursing Institute, Mymensingh.	30
	33. Scabo Nursing Institute, Mymensingh.	40
Khulna	34. Ad-Din Nursing Institute, Jessore	30
	35. CSS Nursing Institute, Khulna (Not admitted)- Seat no: 30	-

Table continued

Division	Name of nursing institution	No. of seats
	36. GMR Nursing Institute, Sonadanga, Khulna	50
	37. Safina Nursing Institute, Kushtia	30
	38. Impact Nursing Institute, Amihupi, Meherpur.	20
Rajshahi	39. Nursing Institute attached with KhajaYunus Ali Medical College Hospital, Enayetpur, Sirajganj	50
	40. Nursing Institute attached with Rajshahi Missionary Hospital	20
	41. Pabna Community Nursing Institute, Sathia, Pabna	40
	42. Islami Bank Medical College Hospital Nursing Institute, Rajshahi	100
	43. Shah Maghdum Nursing Institute, Boalia, Rajshahi	30
	44. TMSS Nursing College, Thengamara, Bogra	100
	45. Mojibur Rahman Foundation Nursing Institute, Joypurhat	40
	46. Diabetic Association Nursing Institute, Rajshahi	60
	47. Ideal Nursing Institute, Sherpur Road, Bogra	50
	48. Safa-Macca Nursing Institute,Sirajganj	40
	49. N.I. Christian Mission Hospital, Rajshahi.	30
Sylhet	50. North East Nursing Institute, Sylhet	100
	51. Begum RabeyaKhatun Chowdhury Nursing Institute, Sylhet.	50
Rangpur	52. Rangpur Community Nursing Institute, Rangpur	50
	53. Prime Nursing College, Rangpur	40
	54. Talab Nursing Institute, Parbotipur, Dinajpur	50
	55. Institute of Nursing Science, Dinajpur	50
	56. Saint Vincent Nursing Institute, Dinajpur	40
	57. Inst. of Nursing Science. Zia-H.F.H. Upasahar, Dinajpur.	50
	58. Northern Institute of Nursing science, Dhap, Rangpur.	40
	59. The Green Life Nursing Institute, Dinajpur.	30
	Total seats	2555

Private-sector institutions to produce midwives
Junior midwifery institutions, with the number of seats in each (December 2013)

Division	Name of junior midwifery institution	No. of seats
Chittagong	1. Junior Midwifery Institute, Red Crescent Matrisadan Hospital, Chandpur	20
	2. Jemison Red Crescent Midwifery Institute, Agrabad, Chittagong	50
	3. Christian Hospital, Chandroghona, Rangamati	20
	4. Junior Midwifery Institute, Memon Hospital, City Corporation, Chittagong	30
Dhaka	5. Junior Midwifery Institute, Holy Family Red Crescent Hospital, Dhaka	60
	6. Junior Midwifery Institute, Shaheed Moyez Uddin Memorial Red Crescent Matrisadan Hospital, Bangla Bazar, Dhaka	20
	7. Junior Midwifery Institute, Kumudini Hospital, Mirzapur, Tangail	20
	8. Central Hospital Nursing Institute, Green Road, Dhanmondi, Dhaka	20
Khulna	9. Junior Midwifery Institute Ad-Din Matrisadan Hospital, Jessore	20
	10. Junior Midwifery Institute, Fatema Hospital, Jessore	20
Rajshahi	11. Junior Midwifery Institute, Christian Hospital, Bogra	20
Rangpur	12. Prime Nursing College, Rangpur	20
	Total seats	**320**

Government Medical Assistant Training Schools (MATS), with the number of seats (December 2013)

Division	Name of MATS	No. of seats
Chittagong	Medical Assistant Training School, Comilla	52
	Medical Assistant Training School, Noakhali	102
Dhaka	Medical Assistant Training School, Faridpur	52
	Medical Assistant Training School, Tangail	102
Khulna	Medical Assistant Training School, Bagerhat	152
	Medical Assistant Training School, Kushtia	102
	Medical Assistant Training School, Jhenaidah	52
Rajshahi	Medical Assistant Training School, Sirajganj	102
	Total seats	**716**

Private Medical Assistant Training Schools (MATS), with the number of seats (December 2013)

Division	Name of institution	Year of establishment	No. of seats
Chittagong	Comilla Institute of Technology and MATS, Thakurpara, Comilla	2008	75
	Chittagong Institute of Medical Technology, Chittagong	2011	50
	Moynamoti Medical Assistant Training School, Comilla	2011	50
	Noakhali Paramedical Centre (NPCMATS)	2011	50
	Brahmanbaria Medical Assistant Training School, Brahmanbaria	2011	50
	Chandpur Medical Assistant Training School, Chandpur	2011	50
Dhaka	AR Medical Assistant Training School, Mohammadpur, Dhaka	2008	75
	Advance Medical Assistant Training School, Green Road, Dhaka	2010	100
	Bangladesh Medical Assistant Training School, Uttara, Dhaka	2009	50
	Dhaka Medical Assistant Training School, Mirpur, Dhaka	2009	100
	New Pilot Medical Assistant Training School, TangailSadar	2008	50
	Rabeya Medical Assistant Training School, Savar, Dhaka	2009	75
	Rampura Medical Assistant Training School, Rampura, Dhaka	2008	80
	Rumdo Medical Assistant Training School, Mymensingh	2008	75
	SAIC Institute of Medical Assistant, Mirpur, Dhaka	2008	40
	SIMT Medical Assistant Training School, Kalabagan, Dhaka	2008	100
	Spark SIMT Medical Assistant Training Academy, Mirpur, Dhaka	2008	60
	SPKS Medical Assistant Training School, Mirpur, Dhaka	2008	75
	Sumona Medical Assistant Training School, Sadarghat, Dhaka	2008	60
	The Medical Assistant Training School, Mirpur, Dhaka	2007	125
	Trauma Medical Assistant Training School, Mohammadpur, Dhaka	2008	100
	Institute of Medical Assistants, Faridpur	2010	50
	Eden Medical Assistant Training School, Mirpur, Dhaka	2010	50
	Tangail Medical Assistant Training School, KumudiniCollege Road, Tangail	2010	125
	Shyamoly Medical Assistant Training School, Mohammadpur, Dhaka	2010	100
	Taleb Ali Medical Assistant Training School, Natun Bazar, Mymensingh	2010	50
	Rajbari Community Medical Assistant Training School, Rajbari	2010	50
	National IM&DT MATS, Mohammadpur, Dhaka	2010	50
	Prince Medical Assistant Training School, Saver, Dhaka	2010	50
	Khondoker Abdul Mannan Medical Institute (MATS), Kishoreganj	2010	50
	Reliable Medical Assistant Training School, Mirpur, Dhaka	2011	50
	Dr. Halima Khatun Medical Assistant Training School, Mymensingh	2011	50
	Jashimuddin Medical Assistant Training School, New College Road, Jamalpur	2011	50
	Shahid SA Memorial Medical Institute, Uttara, Dhaka	2011	50
	Paramedical Institute, Chandona, Gazipur	2011	50

Table continued

Division	Name of institution	Year of establishment	No. of seats
	Institute of Medical Technology & MATS, Narayanganj	2011	50
	Fortune Institute of Medical Technology, Dour Rajbari, Kamarpara Road, Turug Thana, Dhaka	2011	50
	New Turag General Hospital Private Limited, Station Road, Tongi, Gazipur	2011	50
	Rajdhani Medical Assistant Training School (Rajdhani MATS), Mirpur, Dhaka	2011	50
	Dhaka Microlab Institute of Medical Technology (IST, MATS)	2011	50
	Nidasa Medical Assistant Training School, 20/24 North South Road, Siddik Bazar, Dhaka	2011	50
	Bibartan Medical Assistant Training School,Mirpur,Dhaka	2011	30
	Matri Sheba Medical Training School (MATS),Kona Bari, Gazipur	2012	25
	Ideal Medical Training Institute & Health Technology, Mymensingh Road,Sabalia, Tangail	2012	50
	Dr. Rubi Medical Assistant Training School, Shyamoly, Dhaka	2011	50
	Scholar Medical Assistant Training School (MATS), Maskanda, Mymensingh	2011	50
	Eitam Welfare Organization, Mohammadpur, Dhaka	2012	50
	Firoza Medical Assistant Training School, Sholakia, Kishoreganj	2012	50
	Jamuna Medical Assistant Training School, TangailSadar	2012	30
	Gazipur Pharmacitecal Institute, Chandra, Sadar Gazipur.	2011	50
Rajshahi	Rajshahi Medical Assistant Training School, Rajshahi	2008	100
	Health Ways Medical Assistant Training School, Bogra	2013	60
	SIMT Medical Assistant Training School, Nishindho, Bogra	2008/2011	30
	TMSS Medical Assistant Training School, Bogra	2008	100
	Udayan Medical Assistant Training School, Rajshahi	2008	180
	Medical Assistant Training School, Joypurhat	2008	50
	Ideal Medical Technology, Sherpur Road Koloni, Bogra	2008	50
	People's International Medical Assistant Training School, Airport Sarak, Sapura, Rajshahi	2008	50
	Galaxy Medical Assistant Training School, Sapura, Rajshahi	2010	75
	Pabna Community Medical Assistant Training School, Bisnopur, Sathia, Pabna	2011	50
	Bangladesh Institute of Medical Technology, HetemKha, Bowalia, Rajshahi	2011	50
	PIMT Medical Assistant Training School, (MATS), Bogra	2011	50
	Natore Medical Assistant Training School , Natore	2011	50
	ASI Medical Assistant Training School, (MATS), Sirajganj	2011	50
	NDC Medical Assistant Training School, (NDC MATS), Paharpur Road, Khanjonpur, Joypurhat	2011	75
	Pabna Medical Assistant Training School, Mujib Palace, PP Road, Singa, Pabna	2011	50
	Joypurhat Medical Assistant Training School, Joypurhat.	-	50
	Rediam Medical Training School, Talainari, Boalia, Rajshahi.	-	50
	City Institute of Medical Technology, Bohorampur, Rajshahi	-	50
	Sirajganj Modern Medical Training School,Coddarmore, Sirajganj	2011	25
	Anwara Medical Assistant Training School, Dinajpur	2011	75
	TS Medical Assistant Training School, New Bagura Road, Sirajganj	2011	50
	Morning Glory Medical Assistant Training School, Shibtola, Chapainowabganj	2012	50
	SDDL Medical Assistant Training School (MATS), Bogra	2012	50
	Prime Institute of Medical Technology, 213/A Talaimari, Rajshahi	2011	50
Khulna	State Medical Assistant Training Academy, Mill Gate Sarak, Kaliganj, Jhenaidah	2011	50
	Ideal Medical Assistant Training School (MATS),Poura College Para, Chuadanga	2012	25
	Uttar Banga Medical Assistant Training School, Uttar Banga MATS	2011	50
	State Medical Assistant Training Academy, Mill Gate Sarak, Kaliganj, Jhenaidah	2011	50
	Ideal Medical Assistant Training School (MATS),Poura College Para, Chuadanga	2012	50
	Khulna Medical Assistant Training School(MATS), Khulna	2011	50
	Dr.Liza Raton Medical Assistant Training School, 42/1 NS Road, Kushtia	2011	75
	Alo Medical Assistant Training School, Alobhaban, NS Road, Kushtia	2011	50
	Ideal Medical Assistant Training School (MATS), Alamdanga Road, Pouro College Para, Chuadanga	2012	25
	Unilab Medical Assistant training School, Magura	-	50
Barisal	Morning Sun Assistant Training School (MATS), NobogramRoad, Barisal	2012	25
	Disable Welfare Foundation Medical Assistant Training School, Sabujbagh, Patuakhali	2012	50
Rangpur	Rangpur Medical Assistant Training School, Rangpur	2010	65

Table continued

Division	Name of institution	Year of establishment	No. of seats
	Central Medical Assistant Training School (MATS), Rangpur	-	50
	Green International Medical Assistant Training School, Rangpur	-	150
	Jalalabad Medical Assistant Training School, Sylhet	2012	75
	Prime Medical Assistant Training School, Rangpur	2012	80
	Rangpur CT MATS, Kelabond C O Bazar, Rangpur	2012	45
	Janata Medical Assistant Training School, Nageshsori, Kurigram	2011	50
	Creative Medical Training School, Nilphamari		50
Sylhet	Jalalabad Medical Assistant Training School, Sylhet	2011	50
	Maulvibazar Medical Assistant Training School, Kushumbag, Maulvibazar	2011	80
	Sylhet Medical Assistant Training School, Sylhet	2008/2012	40
	Birampur Medocal Assistant training School	-	50
	Total		5855

List of Government Institutes of Health Technology, with number of seats by discipline (December 2013)

Division	Name of institute with location	Estd.	Discipline								Total
			LAB	RDL	PTY	SI	DENT	PHAR	RTY	FF&TR	
Dhaka	Institute of Health Technology, Mohakhali, Dhaka	1963	50	50	50	50	50	50	20	5+2	327
Rajshahi	Institute of Health Technology, Rajshahi.	1976	50	50	50	50	50	50	20	5+1	327
	Institute of Health Technology, Bogra	2006	65	55	50	50	55	55	20	5+2	357
Chittagong	Institute of Health Technology, Chittagong	2011	50	50	50	50	50	50	20	5+2	327
Barisal	Institute of Health Technology, Barisal	2011	50	50	50	50	50	50	20	5+2	327
Rangpur	Institute of Health Technology, Rangpur	2011	50	50	50	50	50	50	20	5+2	327
Khulna	Institute of Health Technology, Jhenaidah,	2012	50	50	50	50	50	50	50	50	327
Sylhet	Institute of Health Technology, Sylhet	2012	50	50	0	0	0	0	0	-	100
Total institutes=8		**Total seats**	**415**	**405**	**350**	**350**	**355**	**355**	**170**	**-**	**2419**

LAB= Laboratory; RDL=Radiology; PTY=Physiotherapy; SI=Sanitary Inspection; DENT=Dentistry; PHAR=Pharmacy; RTY=Radiotherapy; FF&TR=Children of freedom fighters and tribal students

Updated list of private Institutes of Health Technology, with the number of seats by discipline (December 2013)

Division	Name of institute with location	Estd.	Discipline							Total
			LAB	RDL/ RDT	PTY	DENT	PHAR	Other 1	Other 2	
Chittagong	C.S.C.R. Institute of Medical Technology, Golpahar, Chittagong	2008	35	0	25	25	30	0	0	115
	Chittagong Institute of Medical Technology, Halishahar, Chittagong	2005	50	0	0	50	50	0	0	150
	Comilla Institute of Medical Technology, Thakurpara, Comilla.	2007	25	50	0	25	50	0	0	150
	Ilah College of Medical Technology, NaharKutir, East Bank of RanirDighi, Comilla	2005	25	0	0	0	25	0	0	50

Table continued

Division	Name of institute with location	Estd.	Discipline							Total
			LAB	RDL/ RDT	PTY	DENT	PHAR	Other 1	Other 2	
	Institute of Medical Technology, 180 Firingibazar, City Corporation, Chittagong	2003	50	50	0	50	0	0	0	150
	Cox's Bazar Institute of Medical Technology, Cox's Bazar	2011	30	30	0	30	0	0	0	90
	United Care Institute of Medical Technology, Madhyapara, Brahmanbaria	2010	25	0	0	15	0	0	0	40
	Compact Medical Institute, Hazari Road, Feni	2011	25	0	0	50	25	0	0	100
Dhaka	A.R. Institute of Medical Technology, Nabodoy Housing Society, Mohammadpur, Dhaka	2008	50	25	50	50	50	0	0	225
	Ahsania Mission Institute of Health Technology, Mirpur, Dhaka	2008	25	25	25	0	0	0	0	75
	Armed Forces Institute of Medical Technology, Dhaka Cantonment, Dhaka	2010	25	25+25	25	25	25	10 (OTA)	15 (ICA)	175
	Bangladesh Health Profession Institute, Mirpur, Dhaka	1996	50	50	50	0	0	50 (Occupational)		200
	Bangladesh Institute of Medical & Dental Technology, Iqbal Road, Mohammadpur, Dhaka	1997	85	20	20	25	0	25 (B.Sc. in Lab)	25 (B.Sc. in Dentistry)	200
	Bangladesh Medical College, Dhaka	-	0	0	25	0	0	0	0	25
	Center for Rehabilitation of the Paralyzed, Savar, Dhaka	1999	50	50	50	0	0	0	Occu: 50	200
	Dhaka Institute of Health Technology, Humayun Road, College Gate, Mohammadpur, Dhaka	2008	50	0	25	30	40	0	0	145
	Fortune Institute of Medical Technology, Jasimuddin Road, Uttara, Dhaka	2007	50	25	0	50	50	0	0	175
	Gonoshasthya Institute of Health Sciences, Tengra, Sreepur, Gazipur	2006	50	0	25	50	0	0	0	150
	Green View IHT, Green Road, Dhanmondi, Dhaka	2002	50	0	0	40	25	50 (B.Sc in Lab)	0	165
	Institute of Medical Technology, Rajbari	2010	50	0	0	0	50	0	0	100
	Institute of British Colombia Medical Technology, Uttara, Dhaka	2008	40	0	25	25	35	0	0	125
	Institute of Community Health Bangladesh, Mogbazar, Dhaka	2005	50	0	25	25	25	0	0	125
	Institute of Medical Technology, Mirpur, Dhaka	2000	100	0	0	50	50	0	0	200
	Institute of Medical & Dental Technology, Tangail	2007	50	25	0	25	50	0	0	150
	International Institute of Health Sciences, Shawrapara, Mirpur, Dhaka	2006	70	25	25	50	40	0	0	210
	Institute of Medical Technology, Tamizuddin Road, Jhiltuli,Faridpur	2005	50	0	0	50	25	0	0	125
	Jefri Institute of Health Sciences & Technology, Dhanmondi, Dhaka	2009	50	50	50	50	50	0	0	250
	Marks Institute of Medical Technology, Mirpur, Dhaka	2002	50	25	0	50	50	0	0	175
	Millennium Institute of Medical Technology, BacharamDewry, Dhaka	2007	25	25	0	25	0	0	0	75
	National Institute of Medical & Dental Technology, Mohammadpur, Dhaka	2005	34	0	0	0	31	0	0	65

Table continued

Division	Name of institute with location	Estd.	Discipline							Total
			LAB	RDL/ RDT	PTY	DENT	PHAR	Other 1	Other 2	
	National Institute of Medical Technology, Uttara Model Town, Dhaka	2003	50	0	0	50	50	0	0	150
	New Lab Institute of Medical Tech, Asad Gate, Mohammadpur, Dhaka	2005	70	0	0	30	30	0	0	130
	Prince Institute of Medical Technology, Savar, Dhaka	2008	45	0	0	30	40	0	0	115
	Prof. Suhrabuddin Institute of Medical Technology, Sabalia, Tangail	2007	75	0	25+25 (B.Sc in PTY)	45	55	50 (B.Sc in Lab)	25 (B.Sc in Dent)	300
	Radiant Institute of Medical Technology Green Road, Dhaka	2003	40	0	0	40	0	0	0	80
	Rumdo Institute of Medical Technology, Boundary Road, Mymensingh	2007	60	0	0	0	25	0	0	85
	SAIC Institute of Medical Technology Mirpur, Dhaka	2005& 2008	70	10	25	40	40	0	0	185
	Shahid S.A. Memorial Institute of Medical Technology, Uttara, Dhaka	2007	40	0	0	25	25	0	0	90
	Shyamoly Ideal Institute of Medical Technology, Dhaka	2010	50	0	50	50	50	0	0	200
	State University of Bangladesh,iqbal Road, Mohammadpur, Dhaka	2008	0	0	0	0	0	0	50 (Op-tometry)	50
	Sumona Institute of Medical Technology, Sadarghat, Dhaka	2007	50	0	0	30	50	0	0	130
	Trauma Institute of Medical Technology, Shyamoly, Dhaka	2008	75	50	0	25	50	75	50	325
	Christian Institute of Medical Technology, West Tejturi Bazar, Tejgaon, Dhaka	2010	30	0	0	0	30	0	0	60
	Rampura Institute of Medical Technology, Rampura, Dhaka	2010	60	0	0	0	50	0	0	110
	Central Institute of Health Science (Diploma Course), Mirpur, Dhaka	2012	25	25	0	0	0	25 (B.Sc. in Lab)	25 (B.Sc. in PTY)	100
	Dhaka Microlab Institute of Medical Technology, Shahjadpur, Gulshan, Dhaka	2010	30	0	0	15	30	40 (B.Sc. in Lab)	30 (B.Sc. in Lab)	145
	Institute of Medical Technology, Jalkuri, Narayanganj	2010	25	0	0	15	25	0	0	65
	Bhairab Institute of Medical Technology, Kishoreganj	2010	25	0	0	15	25	0	0	65
	Uttara Crescent Institute of Medical Technology, Dhaka	2011	25	25	25	25	25	0	0	125
	Dialab Institute of Medical Technology, Lalbag, Dhaka	2011	25	25	25	0	25	0	0	100
	Mymensingh BNSB Institute of Community Ophthalmology, Mymensingh	2011	0	0	0	0	0	MLOP Asstt.20	0	20
	SPKS Medical Assistant Training School (IHT also), Mirpur, Dhaka	2011	25	0	0	0	25	0	0	50
	Florence Institute of Medical Technology, Maskanda, Mymensingh	2012	40	0	0	40	0	0	0	80
	Genemi Institute of Health Technology, Paik Kandi, Gopalganj	2012	30	30+30	0	0	0	0	0	90
Khulna	Ad-Din Women's Institute of Health Technology, Jessore	2007	25	25	0	25	25	0	0	100
	SAIC Institute of Medical Technology, Khulna	2010	50	0	30	50	50	0	0	180

Table continued

Division	Name of institute with location	Estd.	Discipline							Total
			LAB	RDL/ RDT	PTY	DENT	PHAR	Other 1	Other 2	
Barisal	Advance Institute of Medical & Dental Technology, Barisal	2010	50	25	25	25	50	0	0	175
	Disable Welfare Foundation Science and MT Institute, Sabujbag, Patuakhali	2012	25	0	0	25	0	0	0	50
	Jamjam Institute of Health Technology, Kajipara, C&B Road, Barisal	2012	25	25	0	25	0	0	0	75
Rajshahi	Bangladesh Institute of Medical Technology Haji Mohsin Road, Dilalpur, Pabna	2007	30	0	30	30	30	25 (B.Sc. in Lab)	0	145
	DOD Institute of Medical Technology, Dinajpur,	2010	50	50	0	0	0	0	0	100
	Health Ways Institute of Medical Technology, Bogra	2002	100	0	0	31	50	0	0	181
	Islami Bank Institute of Medical Technology, Rajshahi	2007	50	25	0	25	50	0	0	150
	Janata Institute of Medical Technology, Bogra	2002	50	40	0	40	25	0	0	155
	Joypurhat Institute of Medical Technology, Joypurhat	2010	50	0	0	0	50	0	0	100
	Prime Institute of Medical Technology, 213/A Talaimari, Rajshahi	2006	100	0	0	50	50	0	0	200
	Brahmanbaria Institute of Medical Technology, Baharampur, Rajshahi	2010	25	0	0	0	25	0	0	50
	Naogaon Institute of Medical Science & Technology, Kazirmoor, Naogaon	2011	25	0	0	25	50	0	0	100
	Rajshahi Institute of Medical Technology, Laxmipur, Rajshahi	2002	50	0	0	50	70	0	0	170
	Shah Maghdum Institute of Medical Technology, Bowalia, Rajshahi	2011	30	-	-	20	20	-	-	70
	SAIC Institute of Medical Technology, Bogra	2008	50	0	0	25	50	0	0	125
	TMSS Institute of Medical Technology, Thengamara, Bogra	2007	100	40	0	30	50	0	0	220
	City Institute of Medical Technology, Rajshahi	2010	25	0	0	0	25	0	0	50
	Bangladesh Institute of Medical Technology, Bowalia, Rajshahi	2010	25	0	0	0	25	0	0	50
	NDC Institute of Medical Technology, Joypurhat	2010	50	0	0	0	50	0	0	100
	Sirajganj Institute of Medical Technology, Sirajganj	2010	25	0	0	15	25	0	0	65
	Morning Glory Medical Assistant Training School, Shibtola, Chapainowabganj	2011	25	0	0	0	25	0	0	50
Rangpur	Birampur Institute of Medical Technology, (IHT), Birampur, Dinajpur	2012	50	0	0	0	50	0	0	100
	Prime Institute of Science & Medical Technology, Rangpur	2007	100	0	0	25	50	0	0	175
	Rangpur CT IMT, Kelabond CO Bazar, Rangpur	2012	0	0	0	30	25	40 (Diploma in Lab)	0	95
	Rangpur CT Institute of Medical Technology									145
Total no. of institutions=82		**Total seats**								**10231**

LAB= Laboratory; RDL=Radiology; PTY=Physiotherapy; SI=Sanitary Inspection; DENT=Dentistry; PHAR=Pharmacy; RTY=Radiotherapy; FF&TR=Children of freedom fighters and tribal students

List of govt. and private institutions offering certificate courses in medical technology, with number of seats by discipline (December 2013)

Division	Name of institution with location	Estd.	Optometrist	Refraction	Ophthalmic assistant	Ophthalmic nursing assistant	Cathlab tech	Total
Chittagong	Bangladesh Jatiyo Andho Kallyan Samity, Comilla	2008	25	0	25	0	0	50
Dhaka	Bangladesh Islamia Eye Hospital, Dhaka	2008	25	25	25	25	0	100
	Fashion Eye Hospital Limited, Fashion Tower, 98/60A Boro Mogbazar, Dhaka	2008	0	10	10	0	0	20
	NICVD&H	2010	0	0	0	0	10	10
Total no. of institutions=4		**Total seats**	**50**	**35**	**60**	**25**	**10**	**180**

Government institutions offering BSc courses in Medical Technology, with name of discipline and the number of seats (December 2013)

Division	Name of institution with location	Estd.	Physiotherapy	Laboratory Medicine	Dental	Total
Dhaka	NITOR, Sher-e-Bangla Nagar, Dhaka	1993	25	0	0	25
	Institute of Health Technology, Mohakhali, Dhaka	2007	30	30	60	120
Rajshahi	Institute of Health Technology, Rajshahi	2007	30	30	60	120
No. of institutions=3		**Total seats**	**85**	**60**	**120**	**265**

Private institutions offering BSc and MSc courses in Medical Technology (December 2013)

Division	Name of institution with location	Estd.	Physiotherapy	Laboratory Medicine	Dentistry	Occupational therapy	Others	Total
Dhaka	Bangladesh Health Professionals Institute, Savar, Dhaka (BSc)	2007	20	0	0	10	15 (Speech therapy)	45
	Bangladesh Medical College, Dhanmondi, Dhaka (BSc)	2008	0	0	0	0	0	0
	Bangladesh Shishu Shasthya Institute, Sher-e-Bangla Nagar, Dhaka (BSc)	2008	0	25	0	0	0	25
	GonoShasthya University, Savar, Dhaka (BSc)	2005	60	0	0	0	0	60
	Institute of Medical Technology, Mirpur, Dhaka(BSc)	2007	0	30	30	0	0	60
	International Institute of Health Science, Shewrapara, Dhaka (BSc)	2010	30	30	30	0	0	90
	Mark's Institute of Medical Technology, Mirpur, Dhaka(BSc)	2008	0	50	50	0	0	100
	New Lab Institute of Medical Technology, Iqbal Road, Mohammadpur, Dhaka (BSc)	2010	0	30	30	0	0	60
	SAIC Institute of Medical Technology, Dhaka (BSc)	2007	50	50	50	0	0	150
	State University, Mohammadpur, Dhaka (BSc)	2006	50	30	30	0	50 (Opto-metry)	160
	The People's University, Dhanmondi, Dhaka (BSc)	2007	25	0	0	0	0	25
	GonoSyasthaUniversity, Savar, Dhaka (MSc)	2005	20	0	0	0	0	20
	Bangladesh Health Professionals Institute, Savar, Dhaka (MSc)	2007	15	0	0	0	0	15

Table continued

Division	Name of institution with location	Estd.	Physiotherapy	Laboratory Medicine	Dentistry	Occupational therapy	Others	Total
Chittagong	Chittagong Institute of Medical Technology, Halishahar, Chittagong	2008	0	50	50	0	50 (Ph)	150
Rajshahi	Institute of Health Technology, TuniBhaban, Rajshahi	2007	0	25	0	0	0	25
	Prime Institute of Health Technology, Talaimari, Rajshahi	2007	50	0	50	0	0	100
Rangpur	Prime Institute of Science & Technology, Rangpur	2008	0	75	0	0	0	75
Total no. of institutions=17		**Total seats**	**320**	**395**	**320**	**0**	**115**	**1160**

Training/workshop/seminar (FY 2013-2014)

Topic//subject of the training/workshop/seminar	Duration	No. of batches	No. of participants
Local Training			
Short-term			
Essential Service Delivery (ESD)			
ESD Refresher Training for Field Service Providers	21 days	24	600
ESD RefresherTraining for Field Service Providers	6 days	50	1250
Training onNutrition for Field Service Providers	6 days	48	1200
Training on Emergency Medical and Surgical Care for Doctors	7 days	18	450
Training on Medical and Surgical Emergency Management for Support Staff	7 days	28	700
Training on Primary Management & Prevention of kidney & Urological Diseases for Physicians	6 days	08	200
Training on Kidney & Urological Diseases for Nurses	6 days	8	200
Orientation Training on Kidney & Urological Diseases for Health Workers	3 days	50	1250
Training Program for Doctors on Mental Health	6 days	18	450
Training Program for Health Workers on Mental Health	14 days	17	425
Orientation on Early Detection of Breast and Cervical Cancer for Doctors and Nurses	2 days	17	425
Orientation on Cervical and Breast Cancer Awareness for Opinion Leaders	1 days	14	350
Training on Primary Eye Care for Doctors	6 days	11	275
Training on Primary Eye Care for Nurses andParamedics	6 days	18	450
Training for Doctors on Violence against Women and Girls	6 days	13	325
Orientation for Awareness-building on Violence against Women for Health Workers (HA, AHI, HI, SI, etc.)	1 day	12	300
Training Asthma Prevention and Management for Doctors	5 days	14	350
Training for Health Care Providers (Doctors andNurses) on Youth-friendly Health Services	3 days	18	450
Training on Basic Dental Healthcare for Primary Healthcare Providers	5 days	13	325
Training on Recent Advances in Dentistry for Dental Surgeons	6 days	06	150
Orientation on Autism Awareness for Health Personnel and Opinion Leaders at UpazilaLevel	1 day	115	2875
Basic Training (Management & Clinical) for Medical Assistants	6 days	19	475
Training for Doctors on Rational Use of Antimicrobials	3 days	10	250
Orientation for Awareness building on Fistulae Prevention and Care for Field Service Providers and Social Representatives	1 day	25	625
Training on primary management of burn for Nurses and Paramedics	14 days	7	175
Training on Cancer awareness, screening and primary detection for Doctors	5 days	11	275
Workshop on Medical Biotechnology	2 days	32	640
Training on rational/ proper use of blood and blood product transfusion for Doctors and Technologist	2 days	8	200
Training on food adulteration for UHFPO, RMO, MO, SI, HI, DHI etc.	5 days	14	350

Table continued

Topic//subject of the training/workshop/seminar	Duration	No. of batches	No. of participants
Basic service management Training for newly recruited Doctors	7 days	23	575
Training on epidemiology, clinical management and prevention of diarrhoeal diseases and malnutrition for Doctors and Paramedics	5 days	14	350
Total forEssential Service Delivery (ESD) Training		701	17190
Management Training			
Refresher Training on Basic Service Management for Doctors	3 days	46	1150
Management Training on Cardiac Emergency for Health Personnel at Division, District and UZ level	7 days	13	325
Training on Improved Financial Management for Personnel Working at Division, District, Upazila, and Specialized Institutions, TTU and Others	6 days	13	325
Training on Office Management for Office Staff	5 days	18	450
English Language Course for Nurses	28 days	28	420
Arabic Language Course (Training) for Nurses	28 days	27	378
Basic Computer Training for health personnel	28 days	17	255
Refresher Computer Training on Operating System, Installation, Internet,etc.for the Personnel of MOHFW, DGHS, and Autonomous Institutions	14 days	29	435
Training for SSN, SNs, ASN, MTs, and others on Proper Use and Preventive Maintenance of Medical Equipment	3 days	28	554
Training on Standard Operating Procedures (SOP) regarding IPD, OPD, OT, Emergency, House-keeping, Record-keeping, Nursing Services, Diagnostic Services, etc. for Service Providers of Primary, Secondary and Tertiary Hospitals	5 days	17	425
Basic Training on Hospital Waste Management for Support Staff	3 days	20	500
Training on Store Management for Store-keepers	5 days	06	150
Training for medical technologist (Radiology) on CT, MR and CR.	14 days	10	250
Training on Gender Issue for Field Staff (HA, AHI, HI, SI, etc.)	3 days	50	1250
Organization onJoint Simulation Exercise with BDRCS at Most Cyclone-prone Districts(Multi-sectoralApproach) on Emergency Preparedness Response)	2 days	17	425
Training for MOs and Field Staff on Disaster Mitigation/Post- disaster Hazards	2 days	20	500
Training Course on Mass casualty Management for Hospital-level Staff	2 days	17	425
Basic Training on Patient-care and Hospital Management for Nurses, MTs	15 days	11	275
Training on Health Statistics for Statistical Personnel Working at Different Levels of Health services	7 days	6	150
Total of Management Training		393	8642
Orientation for the Members of DTCC and DUTT	1 day	41	1025
Upgradation of Training Management Information System (TMIS)	Gross	0	0
Training Implemented by ICMH	6 days	16	400
Training Implemented by IPH	5 days	27	675
Training Implemented by NIPSOM	6 days	14	350
Training Implemented by IEDCR	3 days	7	105
Training Implemented by BCPS	1-5 days	16	400
Training Implemented by CME	3-7 days	4	100
Development and review of curriculum and Training policy	3 days	6	120
Sub-total cost center & others		131	3175
(a) Sub-total local training		1207	28732
b. Overseas Training			
Different Clinical Specialties			
Short-term (4 weeks or less) Clinical Training for Health Service Providers	1- 4 weeks		57
Short-term (4 weeks or less) Training for Basic Science and Para-clinical Medical Teachers	1- 4 weeks	2	14
Different Management & Public Health Specialties			
Short-term (4 weeks or less) Training on Training and Teaching Technology, Hospital Management, Personnel Management, Waste Management, Exposure Visit of Teachers for Curriculum Development	1-4 weeks	28	120

Table continued

Topic//subject of the training/workshop/seminar	Duration	No. of batches	No. of participants
Specialized Overseas Training			
A. Short-term (4 weeks or less) Hands-on Clinical Training for Health Service Providers in Local Institutions (Resource persons from abroad)	1- 4 weeks		20
B. Exchange Visitsamong the Institutions of Home and Abroad	1- 4 weeks	0	21
(b) Sub-total of Overseas Training		30	232
c. Orientation/Workshop/Seminar			
Workshop	1- 7 days	0	0
Seminar	1- 7 days	0	0
Orientation	1- 7 days	0	0
Advocacy	1- 7 days	0	0
(c) Sub-total		0	0
Grand total (a+b+c)		1237	28964

Percent distribution of new male and female medical and dental doctors produced from various medical and dental colleges during the 5-year period from 2009 to 2013

Name of medical or dental college	2009		2010		2011		2012		2013	
	M	F	M	F	M	F	M	F	M	F
Dhaka Medical College	59.20	40.80	53.80	46.20	47.19	52.81	59.90	40.09	54.87	45.13
Sir Salimullah Medical College	49.70	50.30	61.60	38.40	57.06	42.94	61.07	38.92	53.18	46.82
Rajshahi Medical College	49.60	50.40	32.90	67.10	56.10	43.90	63.90	36.09	54.81	45.19
Rangpur Medical College	46.10	53.90	58.40	41.60	52.17	47.83	55.60	44.39	40.46	59.54
Mymensingh Medical College	53.10	46.90	60.30	39.70	51.61	48.39	61.35	38.64	53.77	46.23
Chittagong Medical College	50.70	49.30	55.80	44.20	54.42	45.58	60.00	40.00	45.98	54.02
M.A.G. Osmani Medical College, Sylhet	55.90	44.10	56.90	43.10	54.19	45.81	57.14	42.85	57.14	42.86
Sher-e-Bangla Medical College, Barisal	42.00	58.00	56.00	44.00	48.17	51.83	63.15	36.84	61.19	38.81
Faridpur Medical College	62.70	37.30	42.40	57.60	53.33	46.67	49.57	50.42	43.52	56.48
SZR Medical College, Bogra	50.90	49.10	32.10	67.90	43.01	56.99	52.30	47.69	45.45	54.55
Dinajpur Medical College	52.00	48.00	34.60	65.40	48.00	52.00	52.94	47.06	56.60	43.37
Khulna Medical College	47.50	52.50	54.40	45.70	52.50	47.50	69.82	30.17	51.26	48.74
Comilla Medical College	44.20	55.80	43.30	56.70	42.86	57.14	36.05	63.94	51.30	48.70
Dhaka Dental College	55.70	44.30	53.60	46.40	46.51	53.49	41.67	53.84	33.33	66.67
Chittagong Dental College	22.20	77.80	44.40	55.60	28.81	71.19	44.18	55.82	44.74	55.22
Rajshahi Dental College	46.00	54.10	33.30	66.70	30.77	69.23	57.47	42.56	39.13	60.87
Overall	**50.80**	**49.20**	**48.60**	**51.60**	**50.18**	**49.82**	**55.68**	**44.32**	52.89	47.11

M= Male; F=Female

Annex to Chapter 17

11 COIA Indicators for Maternal and Child Health

1. Maternal mortality ratio (deaths per 100,000 livebirths)
2. Under-five child mortality, with the proportion of newborn deaths (deaths per 1,000 livebirths)
3. Under-five children who are stunted (percentage of children below five years of age whose height-for-age is below minus two standard deviations from the median of the WHO Child Growth Standards)
4. Met need for contraception (proportion of women aged 15-49 years, who are married or in union and who have met their need for family planning, i.e. who do not want any more children or want to wait at least two years before having a baby, and are using contraception)
5. Antenatal care coverage (percentage of women aged 15–49 years, with a livebirth, who received antenatal care from a skilled healthcare provider at least four times during pregnancy)
6. Antiretroviral prophylaxis among HIV-positive pregnant women to prevent vertical transmission of HIV, and antiretroviral therapy for women who are treatment-eligible
7. Skilled attendance at birth (percentage of livebirths attended by skilled health personnel)
8. Postnatal care for mothers and babies (percentage of mothers and babies who received postnatal care visit within two days after childbirth)
9. Exclusive breastfeeding for six months [percentage of infants aged 0–5 month(s) who are exclusively breastfed]
10. Three doses of the combined diphtheria/pertussis/tetanus vaccine (percentage of infants aged 12–23 months, who received three doses of diphtheria/pertussis/tetanus vaccine)
11. Antibiotic treatment for pneumonia [percentage of children aged 0–59 month(s) with suspected pneumonia receiving antibiotics]

Health Workforce Information System in Bangladesh: Problems and Solutions

Why we need health workforce information system?

The human resource management departments at ministries, agencies, and organizations frequently need to know information on human resource distribution, vacancies, leave status, etc. The health planners and development agencies emphasize the health workforce information for the whole country, both in public and private sectors. Bangladesh's MOHFW has much over 100,000 regular staff members across different agencies. Without an integrated electronic system, it is difficult to make available all information on the ministry-wide human resources. Detailed human resource information is important for making long-term human resource planning, production, placement, and management. It is important to know health workforce information not only for those who are working under MOHFW but also for those health workforce who work under other ministries and those working in the private sector, including those who constitute the self-employed health workforce. Even the informal healers are a matter of concern. A recent study done in Gaibandha district of Bangladesh by JiVita Project of Johns Hopkins University, USA, among women suffering from threatened abortion reveals that about 70% of them first went to informal healers. When some of them had complications, they consulted qualified healers. During treatment under qualified healers, if they felt a bit better, they again returned to the informal healers. This kind of to-and-fro movement was noticed four times, on average, which may be attributed to financial implication and/or travel for consulting a qualified healer. However, the study shows that informal healers are factors to influence health situation in Bangladesh.

What are the data elements and complexities?

The most frequent information profile that all agencies under MOHFW require include: sanctioned posts, filled-up posts, vacancies, retirement, leave, deputation, lien, death, resignation, disciplinary action, migration, untraced, salary, training, etc. with regard to distribution by staff category, such as skill mix, demographic information, and workplace (health

organization, urban, rural, administrative boundaries, hard-to-reach, poverty stricken, etc.).There are multiple agencies (MOHFW, DGHS, DGFP, NIPORT, DNS, DGDA, and HED), and there are many types of posts in each agency. The naming of sanctioned posts suffer from lack of uniformity even within the same organization. For example, under DGHS, there are over 1,200 categories of posts. Some posts are the same but have different names. The same posts have different payscales. The human resource structure is also not standardized, having variation between same kinds of organizations. The HR management is done separately in each agency by many vertical authorities. For example, the DGHS staff members are managed or administered by over 600 authorities (MOHFW, DGHS, divisional offices, district offices, upazila offices, medical colleges, secondary/tertiary hospitals and institutions) across countries by paper-based office orders. The office copies of the orders are maintained in paper folders in silos and are often difficult to trace. In most cases, these folders become untraceable as time passes. Some information, viz. on death, retirement, untraced employees, etc. as these events happen in local organizations, takes a long time to reach to central offices. The MOHFW and all agencies face a common problem of duplicate posting in the same post due to lack of exact information on who is where.

Evolutions in ministry's HR-MIS

The ministries deal with management of Class I category of staff and so want to make a solution to update information on Class I staff in a common place of each agency. So, DGHS and DGFP were asked to start a program in 1990s on personal data-sheet (a personal resume of each doctor in DGHS and of each Class I officer in DGFP). Each of the officers was required to submit a paper (PDS form) every quarter to MIS headquarter. Staff members in MIS-headquarter used to put the information in stand-alone Microsoft Access database. The compliance was not satisfactory, and the process also appeared as burden over the doctors. Thus, in 2008, DGHS converted the stand-alone database to an online system where the doctors could update their own information as and when required. For submission of PDS for official purpose, the officer requires to take a print-out and signature of local authority on the PDS for verification and authentication of data. However, ensuring the compliance remains as a problem. Doctors feel an urge to update PDS only when they are required to submit the PDS for official reason. As the PDSs are individual resumes, there is no way to track relationship with sanctioned posts to estimate vacancy by type of post, geographic location, or by organization. DGFP still maintains the PDS system and makes manual approach to making the system updated at intervals. The Directorate of Nursing recently developed an HR Management Information System, which is also resume-based. PDSs are only for officers and do not provide information on other staff and on sanctioned posts.

New HR-MIS in DGHS: triggered from a debate in National Parliament

On 7 February 2012, there was a debate in the Parliament, accusing MOHFW for not distributing medical doctors equitably throughout the country. Honorable Minister, in response, decided to redistribute doctors to create a reasonably equitable availability throughout the country, particularly in upazila levels. This demanded collection of data quickly from allover the country. A new online HR-MIS system was developed quickly with a view to collecting a core set of information on all categories of staff. The respective organizations have been given responsibility for entering data and keeping the system updated. The system guaranteed reliability of data as it is updated by the respective organizations. The system was initially designed for health workforce of facilities (70,000 staff members) under DGHS and could successfully capture data of about 60,000 staff members. The data on community health workers and community clinics staff are maintained in separate databases. The system has been designed in such a way that all kinds of human resource function, such as posting, transfer, release, joining, leave, vacation, disciplinary action, retirement, resignation, termination, abstention, death, etc. can be managed online across all organizations backed by alert system so that accurate and up-to-date HR information can be made available. Health workforce distribution with age, sex, skill-mix, qualification, and other disaggregation is also possible. However, the HRM departments did not use the system and continued to use the paper-based transfer and other human resource management functions. As a result, this new HR-MIS also could not be made successful in providing updated real-time HR information. However, this new system also lacks capability to track information in relation to sanctioned posts.

Weaknesses in all existing HR information systems

The DGHS was required to develop not only the above-mentioned HR-MISs but also other short-term databases to quickly meet the ad-hoc requirements of the policy-makers. The electronic HR-MIS in each agency has been developed using non-standard coding systems and without considering inter-operability issues between agencies. Therefore, it is not possible to merge data from them electronically

to produce relational analysis. All databases were built for tracking individual staff under their own agency—without considering need for tracking relationship with sanctioned posts, which required to know vacancy status and distribution of sanctioned posts by category. Also, no consideration has been given to include HWF in non-state sectors. None of the systems can provide real-time updated information on existing staff as compliance has not been ensured.

DGHS developed an integrated HR-MIS as building block of an integrated National HIS

The MIS-DGHS has done large-scale nationwide deployment of IT projects for national health information systems and eHealth. One of its core activities under rapid progress is the development of a National eHealth Enterprise Architecture (eHEA), incorporating several electronic registries (viz. geo-location, health organization, health professional, every citizen's life-time EHR, asset, etc.) connected through virtual electronic Health Information Exchange (HIE) with ultimate aim to work in unison with the Civil Registration and Vital Statistics Systems and National Population Register to be jointly developed by the MOHFW, Ministry of Local Government and National Statistics Office (BBS). We already completed the development of geo-location and organization registry. Health professional registry for DGHS is almost completed. Other organizations and private sector will be added incrementally. Individual records of 120 million citizens have been collected using machine-readable forms, the soft version of which will be available by November 2013. An integrated HR-MIS is part of this large-scale long-term project. We have heavily experimented several human resource software available in the world, including iHRIS, OrangeHRM, etc. However, the complexities and diversities of HWF and its management processes in MOHFW and Bangladesh did not allow us to make a satisfactory choice from any of the globally-available well-reputed software systems. In this context, our developers decided to build our own customized system as building-block of the National eHealth Enterprise Architecture. The newest integrated HR-MIS is now populating data from the existing HR-MIS and already updated all sanctioned posts country-wide for DGHS. This system meets international standards and inter-operability framework. It is ready for capturing HWF data for all agencies under MOHFW and for all other ministries and private sectors, including self-employed care providers and informal healers incrementally. It is capable of reporting agency- or organization-wise disaggregated data in all human resource-related parameters. It is capable of showing relationship between sanctioned and available posts. The design may start with simple profile to scale up to any level of complexity, i.e. automation for all kinds of HWF functions and processes, including automated alert systems, synchronized with biometric time attendance machine and payroll. Given due consideration that adequate policy support may not be available for using the system as a ministry-wide application, it has been planned to use it, in such cases as a system for DGHS, MOHFW, other ministries, and non-state sector.

Other considerations for a national integrated HR-MIS

A national integrated HR-MIS requires a data warehouse having adequate data security, back-up, privacy-protection, and technical personnel to support, maintain, recover from disaster, and upgrade. The MIS-DGHS has already established state-of-the-art data center and a remote (400 km away) disaster recovery system, in addition to various online and offline back-up systems at the national level. An outsourced IT company, responsible for managing data center of a mobile phone company, looks after our national data center. We have three Internet service providers; each transmits Internet connectivity through two fiber-optic lines through two separate routes to ensure 99.9% connectivity and server uptime. We have created an experienced and skilled developer and support team. Our existing resources can easily be shared among multiple agencies and can further be built to cater to requirements of multiple agencies and multiple functionalities. Such use by multiple stakeholders will increase cost-effectiveness, efficiency, and data quality.

Design and process agreement for shared HR-MIS

For a shared resource, following requirements are essential to follow:

- Common exhaustive online form that captures all required data elements of every agency and stakeholder; Required data elements may vary between agencies or stakeholders; Intelligent design may enable view of only required fields relevant for organization or agency
- Common process for each agency
- Common coding system for common data elements
- Common updating mechanism by all users; Responsibility (how and who to update)
- Accountability and feedback mechanism to ensure compliance.

The health sector of Bangladesh is a huge enterprise

with health workforce managed through many agencies, stakeholders, organizations, and locations. A shared centralized database accessible online to all end-users from any geographic location and conducting all human resource functions and processes through automated system could be the best option for managing its HR information. Integrating the information system with payroll may be a good incentive and conditional option to ensure that the HR-MIS will remain updated.

How to capture data from non-state service providers?

The MOHFW may be able to exert influence on the registered private health institutions, hospitals, clinics, diagnostic centers, etc. for providing data on their HWF. However, it is difficult to get data from the unregistered private health institutions, hospitals, clinics, diagnostic centers, self-employed caré providers, etc. The regulatory boards, viz. Bangladesh Medical and Dental Council, Bangladesh Nursing Council, Bangladesh Pharmacy Council, State Medical Faculty, Homeopathic and Unani Board, etc. will have to play roles to impose binding on all registered health professionals to provide updated information annually, with a tracking system to identify, communicate, apply accountability framework and update information of the defaulters. The tracking mechanism may also be started from registration of health professionals from their graduation and/or certification level directly through academic/training institutions. The registration and updating of information of informal healers may be done through the community clinics and government CHWs.

Guaranteeing the use and updating of integrated HR-MIS

Without strong policy decision and strict enforcement, it would not be possible to implement and maintain a successful integrated health HR-MIS in Bangladesh. The role of HRM departments is the most crucial in this respect. Until and unless the HRM departments under the MOHFW and agencies will own and be serious about implementation of effective HR-MIS, any measure may not be fully successful. Currently, the HRM departments conduct most human resource functions, using manually-produced paper-based office orders without using databases. Building a fully-functional integrated HR-MIS is a gradual process and should be developed incrementally as part of a long-term integrated solution. Any isolated ad-hoc measure will simply waste money and time and will end up in failure. Rather than duplicating the same effort, it is the best idea to pay attention to already-existing resources, to use these as shared resource and to build upon these. Provision of mandatory use of online system for all human resource management function will ensure real-time updates of HR information and analysis.

The recognition by the United Nations of the success in MIS-DGHS's eHealth is still a pleasant memory

The personnel of MIS-DGHS across the country still reminisce on the recognition by the United Nations. The remarkable success in eHealth of MIS-DGHS made Bangladesh a recipient of the United Nations "Digital Health for Digital Development Award" in 2011. Honorable Prime Minister Sheikh Hasina formally received the award during the 66th United Nations General Assembly held in September 2011 from Dr. Hamadoun, Secretary-General of the International Telecommunication. The ceremony was held on 19 September 2011 in New York, USA

Local training/workshops/seminars held in fiscal 2013-2014

Training/workshops/seminars supported with HPNSDP fund

Type of training	Venue	Duration (day)	Batch (No.)	Participants (No.)
eHealth Advocacy Seminar	MIS-DGHS	1	1	140
Consultative Workshop on HIS &eHealth	MIS-DGHS	1	8	240
Annual MIS Conference (National Level) all Tertiary Hospitals & MCH	MIS-DGHS	2	1	150
Annual MIS Conference (Divisional Level) all Tertiary Hospitals & MCH	7 divisions	2	7	1920
Consultative Workshop with District Level ICT Focal Point	Dhaka	1	1	217
Consultative Workshop with Upazila Level ICT Focal Point	Districts	2	64	1150
Training of Health Workers on HIS &eHealth inclusive of use of mobile Devices	Dhaka	2	1	147
Training of Health Workers on HIS &eHealth inclusive of use ofmobile Phone Devices (PDA)	Upazila	2	288	8198
Computer Training for doctors and Staffs	Dhaka	14	62	1860
Training for Head-Office Staffs	Dhaka	5	4	120
Training of CHCPs on HIS and eHealth	Upazila	2	481	13545
PDA TOT training in district level	District	2	64	1635
			Total	**29322**

Training/workshops supported by UNICEF

Type of training	Venue	Duration (day)	Batch (No.)	Participants (No.)
MIS Training on Web-based DHIS Software for the doctor, statistician and staff nurse	MIS-DGHS	2	13	210
Training on MNCH&N related program monitoring and evidence based local level planning process for health and family planning managers	Civil Surgeon Office	2	6	119
COIA specific HMIS training on MNCH program of community clinic	Upazila Health Office	3	23	484
		Total	**42**	**813**

Training/workshops on medical biotechnology supported with HPNSDP fund

Type of training	Venue	Duration (day)	Batch (No.)	Participants (No.)
Core Group Consultative Workshop	Dhaka	1	1	15
Sensitization Workshop	Dhaka	2	10	300
Training Workshop for Medical Teachers	Dhaka	2	4	120
Hands on Training for Medical Teachers & Scientists	Dhaka	14	4	43

Foreign training held in fiscal 2013-2014

Type of training	Venue	Duration (day)	Batch (No.)	Participants (No.)
Medical Bio-Technology	Malaysia	12	1	8
Short-term training on e-Health & Telemedicine	Thailand	12	1	10
Training on Health Information (HIS)	Malaysia	12	1	10

Annex to Chapter 18

OP/DPP-wise Statement of Allocation, Fund Release and Expenditure of FY 2013-2014

SL#	Name of Project/OP	Allocation					Released					Expenditure					Exp%
		GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	Allocation Release
OP																	
DGHS																	
1	Maternal, Neonatal, Child and Adolescent Health (RADP-1)	4,200.00	25,279.00 721.00	33,000.00	59,000.00	63,200.00	4,200.00	24,432.45 721.00	27,305.14	52,458.59	56,658.59	4,034.50	22,270.14 476.42	27,305.14	50,051.70	54,086.20	85.58 95.46
2	Essential Services Delivery (RADP-1)	1,400.00	4,052.00 0.00	0.00	4,052.00	5,452.00	1,399.99	4,052.00 0.00	0.00	4,052.00	5,451.99	1,208.39	3,063.45 0.00	0.00	3,063.45	4,271.84	78.35 78.35
3	Community Based Health Care (ADP)	250.00	1,000.00 4,500.00	350.00	5,850.00	6,100.00	250.00	925.00 4,212.50	144.65	5,282.15	5,532.15	236.75	977.15 3,675.01	144.65	4,796.81	5,033.56	82.52 90.99
4	TB and Leprosy Control (RADP-1)	400.00	900.00 0.00	4,416.00	5,316.00	5,716.00	400.00	900.00 0.00	4,019.76	4,919.76	5,319.76	220.68	889.06 0.00	4,019.76	4,908.82	5,129.50	89.74 96.42
5	National AIDS/STD Program (RADP-3)	150.00	3,400.00 0.00	300.00	3,700.00	3,850.00	150.00	3,400.00 0.00	300.00	3,700.00	3,850.00	112.75	3,184.17 0.00	300.00	3,484.17	3,596.92	93.43 93.43
6	Communicable Diseases Control (ADP)	1,775.00	4,500.00 0.00	5,000.00	9,500.00	11,275.00	1,740.00	4,411.25 88.75	5,723.89	10,223.89	11,963.89	1,589.95	3,852.70 0.00	5,723.89	9,576.59	11,166.54	99.04 93.34
7	Non-Communicable Diseases (RADP-1)	3,000.00	6,947.00 0.00	0.00	6,947.00	9,947.00	2,853.75	5,635.62 0.00	79.00	5,714.62	8,568.37	2,810.00	3,400.00 0.00	70.00	3,470.00	6,280.00	63.13 73.29
8	National Eye Care (RADP-1)	200.00	135.00 0.00	0.00	135.00	335.00	200.00	135.00 0.00	0.00	135.00	335.00	186.65	127.75 0.00	0.00	127.75	314.40	93.85 93.85
9	Hospital Services Management & Safe Blood Transfusion (RADP-1)	10,000.00	30,985.00 0.00	500.00	31,485.00	41,485.00	10,000.00	30,985.00 0.00	500.00	31,485.00	41,485.00	9,622.95	30,800.34 0.00	269.47	31,069.81	40,692.76	98.09 98.09
10	Alternate Medical Care (RADP-1)	850.00	250.00 0.00	0.00	250.00	1,100.00	850.00	225.00 0.00	0.00	225.00	1,075.00	850.00	143.56 0.00	0.00	143.56	993.56	90.32 92.42
11	In-Service Training (RADP-3)	400.00	2,523.00 0.00	0.00	2,523.00	2,923.00	385.00	2,522.82 0.00	0.00	2,522.82	2,907.82	308.84	2,459.00 0.00	0.00	2,459.00	2,767.84	94.69 95.19
12	Pre-Service Education (RADP-1)	4,334.00	11,000.00 0.00	0.00	11,000.00	15,334.00	4,334.00	11,000.00 0.00	0.00	11,000.00	15,334.00	4,203.88	10,924.57 0.00	0.00	10,924.57	15,128.45	98.66 98.66
13	Planning, Monitoring and Research (Health) (RADP-1)	200.00	830.00 0.00	70.00	900.00	1,100.00	194.00	787.75 0.00	40.00	827.75	1,021.75	156.28	747.72 0.00	40.00	787.72	944.00	85.82 92.39
14	Health Information System & e-Health (RADP-1)	2,625.00	6,750.00 0.00	150.00	6,900.00	9,525.00	2,625.00	6,750.00 0.00	52.70	6,802.70	9,427.70	2,624.82	2,700.87 0.00	38.93	2,739.80	5,364.62	56.32 56.90

Table continued

SL#	Name of Project/OP	Allocation					Released					Expenditure					Exp%
		GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	Allocation Release
15	Health Education and Promotion (RADP-1)	375.00	1,500.00 0.00	200.00	1,700.00	2,075.00	375.00	1,500.00 0.00	200.00	1,700.00	2,075.00	367.41	1,354.37 0.00	200.00	1,554.37	1,921.78	92.62 92.62
16	Procurement, Logistics & Supplies Management (RADP-1)	7,700.00	350.00 0.00	0.00	350.00	8,050.00	7,700.00	350.00 0.00	0.00	350.00	8,050.00	7,694.69	275.13 0.00	0.00	275.13	7,969.82	99.00 99.00
17	National Nutrition Services (RADP-1)	500.00	6,155.00 0.00	0.00	6,155.00	6,655.00	495.20	6,155.00 0.00	0.00	6,155.00	6,650.20	377.02	5,179.50 0.00	0.00	5,179.50	5,556.52	83.49 83.55
	Total of DGHS OP	**38,359.00**	**106,556.00** **5,221.00**	**43,986.00**	**155,763.00**	**194,122.00**	**38,151.94**	**104,166.89** **5,022.25**	**38,365.14**	**147,554.28**	**185,706.22**	**36,605.56**	**92,349.48** **4,151.43**	**38,112.00**	**134,613.00**	**171,218.00**	**88.20** **92.20**
	DGFP																
18	Maternal, Child, Reproductive & Adolescent Health (FP) (RADP-2)	2,500.00	8,250.00 100.00	1,500.00	9,850.00	12,350.00	2,500.00	8,250.00 100.00	1,500.00	9,850.00	12,350.00	2,487.43	7,982.36 95.27	1,500.00	9,577.63	12,065.06	97.69 97.69
19	Clinical Contraception Services Delivery (RADP-3)	7,345.00	2,031.00 0.00	200.00	2,231.00	9,576.00	7,345.00	2,031.00 0.00	200.00	2,231.00	9,576.00	7,322.55	1,184.73 0.00	200.00	1,384.73	8,707.28	90.93 90.93
20	Family Planning Field Services Delivery Program (RADP-2)	2,504.00	23,760.00 0.00	1,000.00	24,760.00	27,264.00	2,504.00	22,808.43 0.00	0.00	22,808.43	25,312.43	2,445.04	20,865.46 0.00	0.00	20,865.46	23,310.50	85.50 92.09
21	Planning, Monitoring and Evaluation of Family Planning (RADP-2)	28.00	152.00 0.00	0.00	152.00	180.00	28.00	152.00 0.00	0.00	152.00	180.00	27.97	150.56 0.00	0.00	150.56	178.53	99.18 99.18
22	Management Information Systems (FP) (RADP-1)	150.00	535.00 0.00	342.00	877.00	1,027.00	150.00	535.00 0.00	342.00	877.00	1,027.00	52.09	241.55 0.00	342.00	583.55	635.64	61.89 61.89
23	Information, Education and Communication (FP) (RADP-1)	843.00	1,225.00 0.00	255.00	1,480.00	2,323.00	843.00	1,225.00 0.00	255.00	1,480.00	2,323.00	687.20	1,184.72 29.60	255.00	1,469.32	2,156.52	92.83 92.83
24	Procurement, Storage and Supplies Management (RADP-1)	1,000.00	20.00 0.00	0.00	20.00	1,020.00	1,000.00	20.00 0.00	0.00	20.00	1,020.00	994.00	19.98 0.00	0.00	19.98	1,013.98	99.41 99.41
	Total of DGFP OP	**14,370.00**	**35,973.00** **100.00**	**3,297.00**	**39,370.00**	**53,740.00**	**14,370.00**	**35,021.43** **100.00**	**2,297.00**	**37,418.43**	**51,788.43**	**14,016.28**	**31,629.36** **124.87**	**2,297.00**	**34,051.00**	**48,068.00**	**89.44** **92.82**
	MOHFW																
28	Physical Facilities Development (RADP-1)	30,900.00	22,700.00 0.00	100.00	22,800.00	53,700.00	30,900.00	19,300.00 0.00	0.00	19,300.00	50,200.00	30,813.47	18,913.10 0.00	0.00	18,913.10	49,726.57	92.60 99.06
29	Human Resources Management (RADP-2)	80.00	700.00 0.00	0.00	700.00	780.00	100.00	745.00 0.00	0.00	745.00	845.00	58.00	612.46 0.00	0.00	612.46	670.47	85.96 79.34
30	Sector-Wide Program Management and Monitoring (ADP)	25.00	200.00 0.00	150.00	350.00	375.00	25.00	192.50 0.00	150.00	342.50	367.50	18.28	147.82 0.00	150.00	297.82	316.10	84.29 86.01
31	Improved Financial Management (RADP-2)	90.00	350.00 0.00	0.00	350.00	440.00	90.00	350.00 0.00	0.00	350.00	440.00	83.28	325.97 0.00	0.00	325.97	409.26	93.01 93.01
32	Health Economics and Financing (RADP-1)	100.00	102.00 0.00	718.00	820.00	920.00	100.00	87.00 0.00	239.73	326.73	426.73	98.24	73.92 0.00	239.73	313.65	411.89	44.77 96.52
	Total of MOHFW OP	**31,195.00**	**24,052.00** **0.00**	**968.00**	**25,020.00**	**56,215.00**	**31,215.00**	**20,674.50** **0.00**	**389.73**	**21,064.23**	**52,279.23**	**31,071.27**	**20,073.28** **0.00**	**390.00**	**20,463.00**	**51,534.00**	**91.67** **98.58**

Table continued

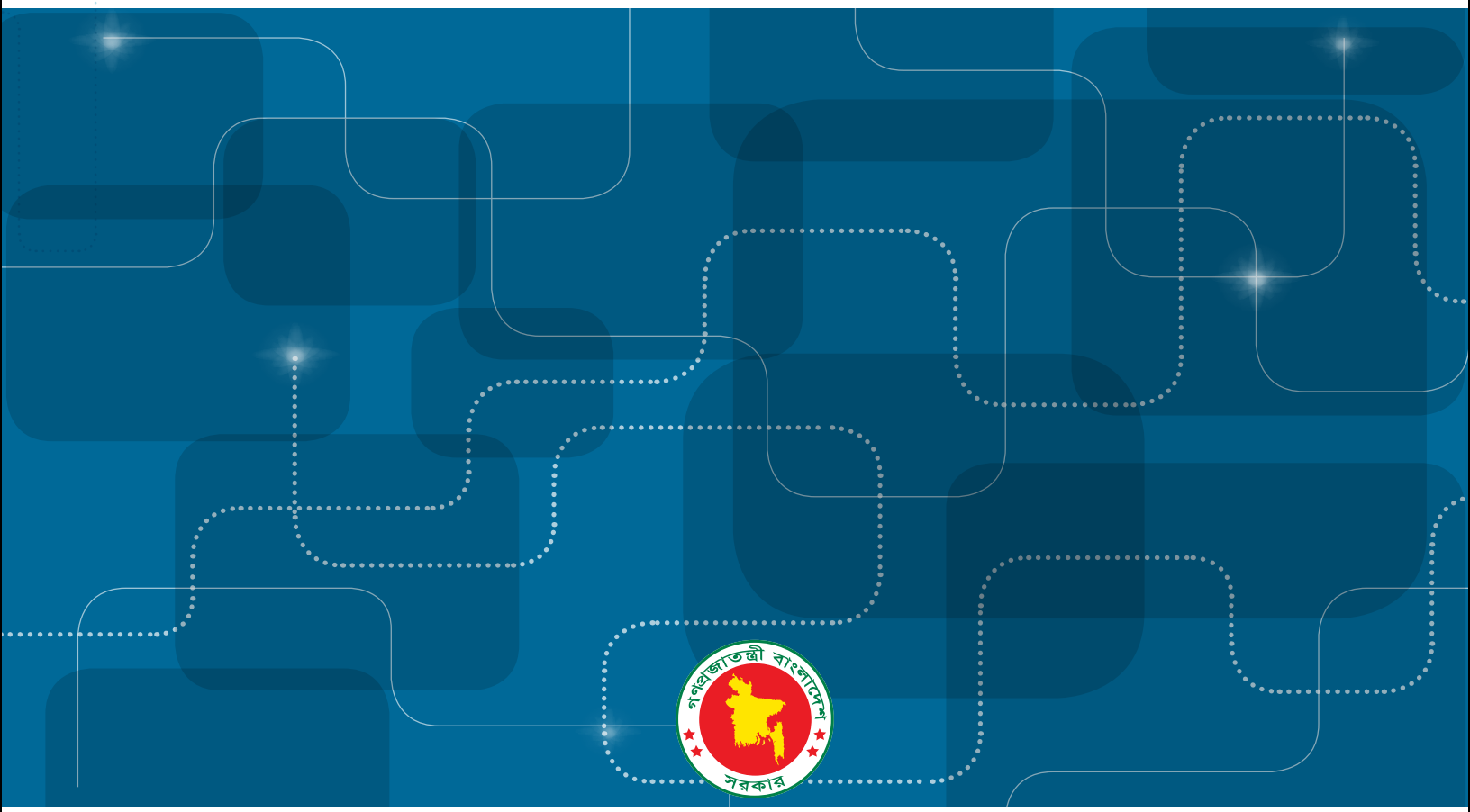
SL#	Name of Project/OP	Allocation					Released					Expenditure					Exp%
		GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	Allocation Release
NIPORT																	
25	Training, Research and Development (NIPORT) (RADP-2)	300.00	1,400.00 0.00	50.00	1,450.00	1,750.00	300.00	1,011.00 388.00	0.00	1,399.00	1,699.00	283.42	1,382.03 0.00	0.00	1,382.03	1,665.45	95.17 98.03
	Total of NIPORT OP	300.00	1,400.00 0.00	50.00	1,450.00	1,750.00	300.00	1,011.00 388.00	0	1,399.00	1,699.00	283.42	1,382.03 0.00	0.00	1,382.03	1,665.00	95.17 98.03
DNS																	
26	Nursing Education and Services (RADP-1)	800.00	2,150.00 0.00	2,850.00	5,000.00	5,800.00	800.00	2,150.00 0.00	2,850.00	5,000.00	5,800.00	798.00	2,139.66 0.00	2,850.00	4,989.66	5,787.66	99.79 99.79
	Total of DNS OP	800.00	2,150.00 0.00	2,850.00	5,000.00	5,800.00	800.00	2,150.00 0.00	2,850.00	5,000.00	5,800.00	798.00	2,139.66 0.00	2,850.00	4,990.00	5,788.00	99.79 99.79
DGDA																	
27	Strengthening of Drug Administration and Management (RADP-1)	50.00	0.00 382.00	50.00	432.00	482.00	37.50	306.00 0.00	0.00	306.00	343.50	28.13	259.35 0.00	0.00	259.35	287.48	59.64 83.69
	Total of DGDA OP	50.00	0.00 382.00	50.00	432.00	482.00	37.50	306.00 0.00	0	306.00	343.50	28.13	259.35 0.00	0.00	259.00	287.00	59.64 83.69
	Sub Total of OP	85,074.00	170,131 5,703	51,201.00	227,035.00	312,109.00	84,874.44	163,330 5,510	43,901.87	212,741.94	297,616.38	82,802.66	147,833.16 4,276	43,648.57	195,758.03	278,560.69	89.25 93.60
Projects																	
1	Est. of 250 beded National Ophthalmology Inst. and Hospital (1st Phase: 250 beds) (RADP-1)	15.00	0.00 0.00	450.00	450.00	465.00	15.00	0.00 0.00	360.44	360.44	375.44	5.50	0.00 0.00	317.80	317.80	323.30	69.53 86.11
2	Upgradation of National Institute of Cancer Research and Hospital from 50 bed to 300 beds (ADP)	102.00	0.00 0.00	1,500.00	1,500.00	1,602.00	102.00	0.00 0.00	636.22	636.22	738.22	95.90	0.00 0.00	636.22	636.22	732.12	45.70 99.17
3	Establishment of National Institute of Laboratory Medicine and Refferal Centre (RADP-1)	600.00	0.00 0.00	0.00	0.00	600.00	600.00	0.00 0.00	0.00	0.00	600.00	599.94	0.00 0.00	0.00	0.00	599.94	99.99 99.99
4	Extension of Dhaka Shisu(Children) Hospital Project (RADP-1)	850.00	0.00 0.00	0.00	0.00	850.00	850.00	0.00 0.00	0.00	0.00	850.00	800.53	0.00 0.00	0.00	0.00	800.53	94.18 94.18
5	Establishment of Essential Drugs Company Limited, 3rd Plant, Gopalganj (RADP-1)	5.00	0.00 0.00	0.00	0.00	5.00	5.00	0.00 0.00	0.00	0.00	5.00	4.97	0.00 0.00	0.00	0.00	4.97	99.40 99.40
6	Expansion and Quality Improvement of Nursing Education (RADP-1)	1,500.00	0.00 0.00	0.00	0.00	1,500.00	1,500.00	0.00 0.00	0.00	0.00	1,500.00	1,498.00	0.00 0.00	0.00	0.00	1,498.00	99.87 99.87
7	Expansion and Modernization of Dhaka Medical College Hospital (RADP-1)	1,259.00	0.00 0.00	0.00	0.00	1,259.00	1,259.00	0.00 0.00	0.00	0.00	1,259.00	1,259.00	0.00 0.00	0.00	0.00	1,259.00	100.00 100.00
8	Establishment of National Institute of ENT (1st Phase) (RADP-1)	935.00	0.00 0.00	0.00	0.00	935.00	935.00	0.00 0.00	0.00	0.00	935.00	850.00	0.00 0.00	0.00	0.00	850.00	90.91 90.91

Table continued

SL#	Name of Project/OP	Allocation					Released					Expenditure					Exp%
		GOB	RPA-GOB / RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB / RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB / RPA-Other	DPA	PA-Total	Total	Allocation / Release
9	Revitalization of Community Health care initiatives in Bangladesh (ADP)	36,620.00	0.00 / 0.00	0.00	0.00	36,620.00	36,620.00	0.00 / 0.00	0.00	0.00	36,620.00	36,356.23	0.00 / 0.00	0.00	0.00	36,356.23	99.28 / 99.28
10	Conversion of BSMMU to a center of excellence project (RADP-1)	6,500.00	0.00 / 0.00	0.00	0.00	6,500.00	6,500.00	0.00 / 0.00	0.00	0.00	6,500.00	6,397.46	0.00 / 0.00	0.00	0.00	6,397.46	98.42 / 98.42
11	Establishment of Sheikh Fajilatunnesa Mujib Eye Hospital and Training Institute, Gopalganj. (RADP-1)	3,417.00	0.00 / 0.00	0.00	0.00	3,417.00	3,416.75	0.00 / 0.00	0.00	0.00	3,416.75	3,389.19	0.00 / 0.00	0.00	0.00	3,389.19	99.19 / 99.19
12	Establishment of National Centre for Cervical and Breast Cancer Screening and Training at BSMMU (RADP-1)	400.00	0.00 / 0.00	0.00	0.00	400.00	400.00	0.00 / 0.00	0.00	0.00	400.00	394.66	0.00 / 0.00	0.00	0.00	394.66	98.67 / 98.67
13	Establishment Sheikh Sayera Khatun Medical College and Hospital and Nursing Institute, Gopalganj. (RADP-1)	900.00	0.00 / 0.00	0.00	0.00	900.00	899.50	0.00 / 0.00	0.00	0.00	899.50	897.31	0.00 / 0.00	0.00	0.00	897.31	99.70 / 99.76
14	Establisment of Shatkhira Medical College & Hospital (RADP-1)	1,428.00	0.00 / 0.00	0.00	0.00	1,428.00	1,428.00	0.00 / 0.00	0.00	0.00	1,428.00	1,426.00	0.00 / 0.00	0.00	0.00	1,426.00	99.86 / 99.86
15	Establishment of Faridpur Medical College & Hospital (RADP-1)	4,016.00	0.00 / 0.00	0.00	0.00	4,016.00	4,016.00	0.00 / 0.00	0.00	0.00	4,016.00	4,015.00	0.00 / 0.00	0.00	0.00	4,015.00	99.98 / 99.98
16	National Institute of Digestive Diseases Research & Hospital (RADP-1)	18.00	0.00 / 0.00	0.00	0.00	18.00	18.00	0.00 / 0.00	0.00	0.00	18.00	18.00	0.00 / 0.00	0.00	0.00	18.00	100.00 / 100.00
17	Eatablishment of Kustia Medical college (RADP-1)	2,150.00	0.00 / 0.00	0.00	0.00	2,150.00	2,150.00	0.00 / 0.00	0.00	0.00	2,150.00	2,150.00	0.00 / 0.00	0.00	0.00	2,150.00	100.00 / 100.00
18	Establishment of Mother and Child Care Hospital under A K Khan Health Care Center of Excellence (RADP-1)	1.00	0.00 / 0.00	0.00	0.00	1.00	0.00	0.00 / 0.00	0.00	0.00	0.00	0.00	0.00 / 0.00	0.00	0.00	0.00	0.00 / 0.00
19	Establishment of Shaheed Sayed Nazrul Islam Medical college , Kishorgong (RADP-1)	5,138.00	0.00 / 0.00	0.00	0.00	5,138.00	5,138.00	0.00 / 0.00	0.00	0.00	5,138.00	4,996.12	0.00 / 0.00	0.00	0.00	4,996.12	97.24 / 97.24
20	Extention of Shaheed Sheikh Abu Naser Specialized Hospital, Khulna (RADP-1)	800.00	0.00 / 0.00	0.00	0.00	800.00	800.00	0.00 / 0.00	0.00	0.00	800.00	796.00	0.00 / 0.00	0.00	0.00	796.00	99.50 / 99.50
21	Establishment of Trauma centre at Gopalgong (RADP-1)	190.00	0.00 / 0.00	0.00	0.00	190.00	170.00	0.00 / 0.00	0.00	0.00	170.00	170.00	0.00 / 0.00	0.00	0.00	170.00	89.47 / 100.00
22	Sustaining Influenza Surveillance Networks and Response to Seasonal and Pandemic Influenza In Bangladesh (ADP)	0.00	0.00 / 0.00	150.00	150.00	150.00	0.00	0.00 / 0.00	130.60	130.60	130.60	0.00	0.00 / 0.00	261.10	261.10	261.10	174.07 / 199.92
23	Provision for equipment and professional training for Ahsania Mission Cancer Hospital (RADP-1)	500.00	0.00 / 0.00	0.00	0.00	500.00	0.00	0.00 / 0.00	0.00	0.00	0.00	0.00	0.00 / 0.00	0.00	0.00	0.00	0.00 / 0.00

Table continued

SL#	Name of Project/OP	Allocation					Released					Expenditure					Exp%	
		GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	GOB	RPA-GOB RPA-Other	DPA	PA-Total	Total	Allocation Release
1114	Extention of National Institute of Orthopadic Hospital and Rehabilitation center (NITOR) (ADP)	200.00	0.00 0.00	0.00	0.00	200.00	200.00	0.00 0.00	0.00	0.00	200.00	193.17	0.00 0.00	0.00	0.00	193.17	96.59 96.59
1115	Establishment of Nursing Institute of Pabna (ADP)	5.00	0.00 0.00	0.00	0.00	5.00	5.00	0.00 0.00	0.00	0.00	5.00	0.00	0.00 0.00	0.00	0.00	0.00	0.00 0.00
	Total of MOHFW Projects	67,549.00	0.00 0.00	2,100.00	2,100.00	69,649.00	67,027.25	0.00 0.00	1,127.26	1,127.26	68,154.51	66,312.97	0.00 0.00	1,215.00	1,215.00	67,528.00	96.95 99.08
	Sub Total of Projects	67,549.00	0.00 0.00	2,100.00	2,100.00	69,649.00	67,027.25	0.00 0.00	1,127.26	1,127.26	68,154.51	66,312.97	0.00 0.00	1,215.12	1,215.12	67,528.09	96.95 99.08
	Grand Total :	152,623.00	170,131.00 5,703.00	53,301.00	229,135.00	381,758.00	151,901.69	163,329.82 5,510.25	45,029.13	213,869.20	365,770.89	149,115.63	147,833.16 4,276.30	44,863.69	196,973.15	346,088.78	90.66 94.62



Government of the People's Republic of Bangladesh
Ministry of Health and Family Welfare